An Observational Study to Assess The Risk Factors And Quality of Life in Spinal Cord Injury Individuals With Pressure Injury

Thesis submitted to

The faculty of

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

For the award of the degree of MD in the subject of

Physical Medicine and Rehabilitation

By

Dr. PRASENJIT BHADRA

(2100371M02P26021)

Under the Guidance of

Dr. VIRENDRA K VERMA

MS Orthopaedics, Fellow in Spine Surgery

Associate Professor

Department of Orthopaedics, AIIMS, Bhopal

OCTOBER 2023

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

UNDERTAKING

I, **Dr. Prasenjit Bhadra,** MD scholar registered in the batch of **July 2021**, vide Registration no. 2100371M02P26021, hereby declare that the data submitted for my MD thesis belongs to me and is original.

I also certify that the work was done by me to carry out this study.

The Institute shall not be responsible for any dispute or any conflict of interest that may arise out of this thesis at any stage.

Prasenjit Bhadra.

Dr. Prasenjit Bhadra

Guide:

Dr. Virendra K. Verma
Reg.No.5233/MS Ortho, Fellow in Spine Surgery
Associate Professor
Department of Orthopaedic
AIIMS, Saket Nagar, Bhopal-462020

Dr. Virendra K Verma

Associate Professor

Department of Orthopaedics

AIIMS, Bhopal

Place: Bhopal

Date: 13.10.2023

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

CERTIFICATE

This is to certify that the thesis entitled **"An Observational Study to Assess The Risk Factors And Quality of Life in Spinal Cord Injury Individuals With Pressure Injury"** is bonafide and genuine research carried out by **Dr. Prasenjit Bhadra** under our guidance and direct supervision for the award of MD.

Guide:
Dr. Virendra K Verma
Associate Professor
Department of Orthopaedics
AIIMS, Bhopal

Dr. Virendra K. Verma
Reg.No.5233/MS Ortho, Fellow in Spine Surgery
Associate Professor
Department of Orthopaedic
AIIMS, Saket Nagar, Bhopal-462020

Co-Guide:
Dr. John A Santoshi
Professor
Department of Orthopaedics
AIIMS, Bhopal

डॉ.जॉन ए संतोषी/Dr. John A. Santoshi
MS Orth, DNB Orth, F Hand Surg. /Reg.No.MP11493
प्राध्यापक/Professor
अस्थिरोग विभाग/Department of Orthopaedics
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Co-Guide:
Dr. Manal M Khan
Additional Professor
Department of Burn & Plastic Surgery
AIIMS, Bhopal

डॉ. मनाल एम.खान/Dr. MANAL M. KHAN
M.S.,M.Ch.(Plastic & Reconst. Surgery) Reg.No.25149
अतिरिक्त प्रध्यापक एवं विभागाध्यक्ष/Addl. Professor & HOD
बर्न एण्ड प्लास्टिक सर्जरी विभाग/Deptt. of Burns & Plastic Surgery
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Place: Bhopal.
Date: 13.10.2023

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

DECLARATION

I hereby declare that the thesis entitled **"An Observational Study to Assess The Risk Factors And Quality of Life in Spinal Cord Injury Individuals With Pressure Injury"** is a bona fide and original work carried out by me under the guidance of Dr. Virendra K Verma (Associate Professor, Department of Orthopaedics, AIIMS Bhopal), Dr. John A Santoshi (Professor, Department of Orthopaedics) and Dr. Manal M Khan (Additional Professor, Department of Burn & Plastic Surgery, AIIMS Bhopal) .The thesis or any part thereof has not formed the basis for the award of any degree/fellowship or similar title to any candidate of any University to the best of my knowledge.

Prasenjit Bhadra

Dr. Prasenjit Bhadra

Place: Bhopal

Date: 13.10.2023

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

CERTIFICATE

This is to certify that the thesis entitled **"An Observational Study to Assess The Risk Factors And Quality of Life in Spinal Cord Injury Individuals With Pressure Injury"** is the work carried out by **Dr. Prasenjit Bhadra** under the guidance of **Dr. Virendra K Verma** in the department of **Physical Medicine and Rehabilitation.**

Dr. John A Santoshi

Officiating Head of the department

Department of Physical Medicine and Rehabilitation

AIIMS, Bhopal

डॉ. जॉन ए संतोषी/ Dr. John A. Santoshi
MS Orth, DNB Orth, F Hand Surg. / Reg.No.MP11493
प्राध्यापक / Professor
अस्थिरोग विभाग / Department of Orthopaedics
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

CERTIFICATE

This is to certify that the thesis entitled **"An Observational Study to Assess The Risk Factors And Quality of Life in Spinal Cord Injury Individuals With Pressure Injury"** is a bona fide and original work carried out by **Dr. Prasenjit Bhadra** under the guidance of Dr. Virendra Kumar Verma (Associate Professor, Department of Orthopaedics, AIIMS Bhopal), Dr. John A Santoshi (Professor, Department of Orthopaedics) and Dr. Manal M Khan (Additional Professor, Department of Burn & Plastic Surgery, AIIMS Bhopal)

Dean (Academics)

AIIMS, Bhopal

Place: Bhopal

Date: **17.10.2023**

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

COPYRIGHT DECLARATION

We hereby declare that **ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL**, shall have all the rights to preserve, use and disseminate this thesis in print or electronic format for academic / research purposes.

Prasenjit Bhadra

Dr. Prasenjit Bhadra

Guide:

Dr. Virendra K Verma
Associate Professor
Department of Orthopaedics
AIIMS, Bhopal

Dr. Virendra K. Verma
Reg.No.5233/MS Ortho, Fellow in Spine Surgery
Associate Professor
Department of Orthopaedic
AIIMS, Saket Nagar, Bhopal-462020

Co-Guide:
Dr. John A Santoshi
Professor
Department of Orthopaedics
AIIMS, Bhopal

डॉ. जॉन ए संतोषी / Dr. John A. Santoshi
MS Orth, DNB Orth, F Hand Surg. / Reg.No.MP11493
प्राध्यापक / Professor
अस्थिरोग विभाग / Department of Orthopaedics
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Co-Guide:
Dr. Manal M Khan
Additional Professor
Department of Burn & Plastic Surgery
AIIMS, Bhopal

डॉ. मनाल एम. खान / Dr. MANAL M. KHAN
M.S.,M.Ch.(Plastic & Reconst. Surgery) Reg.No.25149
अतिरिक्त प्रध्यापक एवं विभागाध्यक्ष/Addl. Professor & HOD
बर्न एण्ड प्लास्टिक सर्जरी विभाग/Deptt. of Burns & Plastic Surgery
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Place: Bhopal
Date: 13.10.2023

All India Institute of Medical Sciences Bhopal

Institutional Human Ethics Committee

Saket Nagar, Bhopal 462 024 Madhya Pradesh, India

LETTER OF PERMISSION

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

Saket Nagar, Bhopal – 462020 (M.P)

Institutional Human Ethics Committee- PostGraduate Research (IHEC-PGR)

www.aiimsbhopal.edu.in Email: ihecpgr@aiimsbhopal.edu.in

Ref Number: IHEC-PGR/2021/PG/Jul/17 **Date:** 21st February 2022

Letter of Permission

Student Investigator:	**Guide:**
Dr. Prasenjit Bhadra	Dr. Swapnil P Sonune
PMR	PMR

AIIMS, Bhopal Institutional Human Ethics Committee- Post Graduate Research (IHEC-PGR) in its 5th meeting held on 10th February 2022 discussed your proposal titled **"An Observational Study to Assess the Risk Factors and Quality of Life in Spinal Cord Injury Individuals with Pressure Injury."** and evaluated it for suitability for your dissertation as required for fulfilment of MD/MS program.

Following members attended the meeting:

1. Prof. D. K. Pal, Former Professor & HoD Community Medicine, GMC, Bhopal…Chairperson
2. Prof. Rajnish Joshi, Professor of General Medicine, AIIMS, Bhopal……Member
3. Prof. Amit Agrawal, Professor of Neurosurgery, AIIMS, Bhopal……Member
4. Dr. Girish Bhat, Assoc. Professor of Paediatrics, AIIMS, Bhopal……Member
5. Dr. Ujjawal Khurana, Asst. Professor of Pathology, AIIMS, Bhopal……Member
6. Dr. Ankur Joshi, Asst. Professor of CFM, AIIMS, Bhopal……Member
7. Dr. Shubham Atal, Asst. Professor of Pharmacology, AIIMS, Bhopal……Member
8. Mr. Yogesh Kumar, Executive Director, Samarthan……Member
9. Dr. Shashank Purwar, Addl Professor of Microbiology, AIIMS, Bhopal…..Member Secretary

The decision of the committee is as follows:

The AIIMS, Bhopal IHEC-PGR approves your research protocol. All research related activities must begin only after the date of this approval. The validity of this approval is till two years from the date of issuance. Please submit a closure report / renewal request before expiration of the validity for this approval.

Shashank Purwar

Dr. Shashank Purwar
Member Secretary, AIIMS Bhopal IHEC-PGR
Additional Professor of Microbiology
AIIMS, Bhopal
Contact Number: 7773010099

Change of thesis guide and co-guide

OFFICE OF THE DEAN (ACADEMICS)
ALL INDIA INSTITUTE OF MEDICAL SCIENCES
Saket Nagar, Bhopal (M.P.) India - 462020

No. Dean (A)/AIIMS BPL/2023/705 Dated: 27/03/2023

NOTICE

The changed/revised details of allotted guides/co-guides for Dr. Prasenjit Bhadra, Junior Resident (Academics), Department of PMR (Batch July 2021) for his thesis titled ***"An observational study to assess risk factors and quality of life in spinal cord injury individuals with pressure injury"*** are proposed vide letter no. 2512 date 03.03.2023.

The Competent Authority approved the following name of guide & co-guides as below:

S.No.	Candidate Name	Guide	Co-guide
1.	Dr. Prasenjit Bhadra Junior Resident (Academics) Department of PMR	Dr. Virendra Kumar Verma, Associate Professor, Department of Orthopaedics	1. Dr. John A Sanotoshi, Professor, Orthopaedics 2. Dr. Manal M Khan, Additional Professor, Burns & Plastic Surgery

Dean (Academics)
AIIMS Bhopal

DEAN ACADEMICS AIIMS SAKET NAGAR, BHOPAL

To,

1. **I/c HoD, Department of PMR**
2. **Dr. Prasenjit Bhadra, Junior Resident(Academics) Department of PMR**

Copy to:

1. Concerned Faculty Members, AIIMS Bhopal
2. Registrar, AIIMS Bhopal
3. PA to the Executive Director – for information to the Executive Director, AIIMS Bhopal
4. Guard File

PLAGIARISM REPORT

DrillBit

The Report is Generated by DrillBit Plagiarism Detection Software

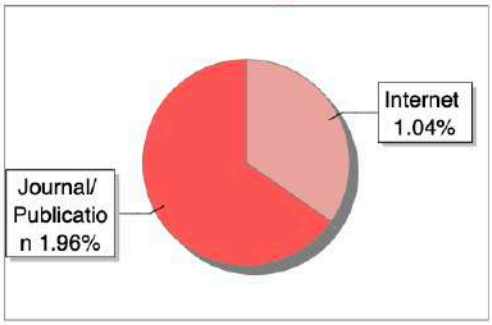
Submission Information

Author Name	Prasenjit P
Title	Thesis
Paper/Submission ID	1021156
Submission Date	2023-10-12 15:17:09
Total Pages	46
Document type	Thesis

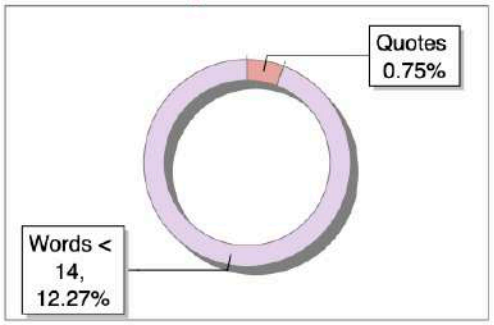
Result Information

Similarity **3 %**

Sources Type



Report Content



Exclude Information

Quotes	Excluded
References/Bibliography	Excluded
Sources: Less than 14 Words Similarity	Excluded
Excluded Source	**7 %**
Excluded Phrases	Excluded

A Unique QR Code use to View/Download/Share Pdf File

PLAGIARISM REPORT

DrillBit

DrillBit Similarity Report

3	7	A	A-Satisfactory (0-10%) B-Upgrade (11-40%) C-Poor (41-60%) D-Unacceptable (61-100%)
SIMILARITY %	MATCHED SOURCES	GRADE	

LOCATION	MATCHED DOMAIN	%	SOURCE TYPE
1	accjournal.org	1	Internet Data
3	actascientific.com	1	Publication
4	www.ijcmr.com	1	Publication
5	ajol.info	1	Publication
6	A study on quality of life among lower limb amputees at a tertiary pr, by Shankar, Pooja Gre- 2019	1	Publication
134	moam.info	<1	Internet Data
174	www.academia.edu	<1	Internet Data

ACKNOWLEDGEMENTS

First and foremost, I would take this opportunity to thank the Almighty for enabling me to pursue my dreams and complete post-graduation in this esteemed institution and also for giving me the strength and knowledge to undertake this research study. Without his blessings, this achievement would not have been possible.

The success and outcome of my thesis required a lot of guidance and assistance from many people and I am extremely privileged to have experienced it.

I am highly indebted for the unconditional support of my guide, **Dr. Virendra K Verma**, Associate Professor, Department of Orthopaedics, AIIMS Bhopal. It has been an honour for me to have conducted this thesis work under his guidance. His divine work ethic have encouraged me throughout the thesis work. His cordial personality has always made me comfortably reach out to him for any doubts. His guidance and support were pivotal in completing the study and I am eternally grateful for it.

My heartfelt thanks to my co-guide, **Dr. John A. Santoshi**, Professor, Department of Orthopaedics, Officiating Head, Department of Physical Medicine and Rehabilitation, AIIMS Bhopal and **Dr. Manal M. Khan**, Additional Professor, Department of Burn and Plastic Surgery, AIIMS Bhopal for their constant guidance and support throughout my thesis. Without their support and guidance completing this thesis work would not have been possible.

I owe my deep gratitude to **Dr. Swapnil Sonune**, former Assistant Professor, Department of Physical Medicine and Rehabilitation, AIIMS Bhopal for being the visionary behind this study.

I am grateful to **Dr. S. Y. Kothari**, former Professor and Head of, the Department of Physical Medicine and Rehabilitation, AIIMS Bhopal, and **Dr. Chethan C.**, former Associate Professor, Department of Physical Medicine and Rehabilitation, AIIMS Bhopal, for their support and guidance which helped me carry out my thesis work.

I am grateful to **Dr. Vithal Prakash Puri**, Associate Professor, Department of Physical Medicine and Rehabilitation, AIIMS Bhopal, **Dr. Anuradha Divakar Shenoy A**, Assistant Professor, Department of Physical Medicine and Rehabilitation, AIIMS Bhopal for their valuable suggestions and constant support which has been nothing short of blessings.

I am honoured to express my heartfelt gratitude towards the senior residents of the Department of Physical Medicine and Rehabilitation, AIIMS Bhopal, **Dr. Nageshwar A. Ujade** and **Dr. Nirav Joshi** for their undaunted friendly support, valuable suggestions, continuous inspiration and constant motivation. Without their inputs, the work would not have been possible.

It would be incomplete without mentioning my seniors **Dr. Suvarna NK**, **Dr. Anyesha Saha** and **Dr. Kalyaanasundhary S.** My heartfelt thanks to my juniors **Dr. Gaurav Goel** and **Dr. Arjun Ravi**, for sincerely helping me in every step of this road.

Last, but not least, I would like to thank my parents **Shri Madhusudan Bhadra**, **Mrs Sipra Dhar Bhadra** and my younger sister **Miss Saheli Bhadra**, for their constant support and for being pillars of my strength.

I also wish to acknowledge all the participants, who cooperated for this research study.

TABLE OF CONTENTS

UNDERTAKING……..……II

CERTIFICATE……III

DECLARATION……..……IV

CERTIFICATE…….……V

CERTIFICATE……VI

COPYRIGHT DECLARATION……VII

LETTER OF PERMISSION…..……VIII

CHANGE OF THESIS GUIDE AND CO-GUIDE…..……..IX

PLAGIARISM REPORT……..X

ACKNOWLEDGEMENT..……XII

TABLE OF CONTENTS……..…1

LIST OF TABLES……4

LIST OF FIGURES……..……5

LIST OF ABBREVIATION…….7

1. INTRODUCTION……..…8

2. REVIEW OF LITERATURE……..……10

3. AIMS AND OBJECTIVE……..……22

A. AIMS……..……22

B. OBJECTIVES…….…… ……..……22

4. MATERIALS AND METHODS……..……23

A. TYPE OF STUDY……..23

B. ETHICAL CLEARANCE……..23

C. PLACE OF STUDY… ……...…23

D. PERIOD OF STUDY… …….……23

E. ALLOCATION… …….……...…23

F. STUDY POPULATION… ……..……23

G. INCLUSION CRITERIA…. ……...……23

H. EXCLUSION CRITERIA… ……..……24

I. SAMPLE SIZE……..… ……..……24

J. SELECTION OF CASES… ……24

K. EXPLANATION AND REASSURANCE… ……..…….25

L. CONSENT… ……..25

M.HISTORY AND EXAMINATION… ……..26

N. INVESTIGATIONS… ….……27

O. ETHICAL ISSUES AND CONFIDENTIALITY…….27

P. EVALUATION AND ANALYSIS… ……27

Q. STUDY TOOLS…… ……..28

R. STATISTICAL ANALYSIS… ……..…29

5. RESULTS……..……30

6. DISCUSSION……56

7. SUMMARY……61

8. STRENGTH AND LIMITATION…….……..……63

9. CONCLUSION…….64

10.FUTURE SCOPE…….…….……...…65

11.REFERENCES…….……66

ANNEXURE 1 & 2: PARTICIPANT INFORMATION SHEET……...…73

ANNEXURE 3 & 4: CONSENT FORM ……78

ANNEXURE 5: UNDERTAKING……...…80

ANNEXURE 6: PROFORMA…….81

ANNEXURE 7: ASIA IMPAIRMENT SCALE …….83

ANNEXURE 8: BRADEN SCALE……..…….85

ANNEXURE 9: SCIPUS SCALE…….86

ANNEXURE 10 & 11: WHOQOL-BREF ……..……87

MASTERCHART…….…….96

LIST OF TABLES

TABLE 1: STAGES OF PRESSURE INJURY (NPIAP 2019)…….11

TABLE 2: RISK FACTORS FOR PRESSURE INJURY (NPIAP 2019)….14

TABLE 3: DEMOGRAPHIC DATA DISTRIBUTION……30

TABLE 4: ASIA IMPAIRMENT SCALE (AIS) DISTRIBUTION……..…34

TABLE 5: ASSOCIATION OF BRADEN SCALE RISK FACTORS WITH STAGES OF PRESSURE INJURY……36

TABLE 6: ASSOCIATION OF SCIPUS RISK FACTORS WITH STAGES OF PRESSURE INJURY……42

TABLE 7: DESCRIPTIVE STATISTICS OF WHOQOL-BREF……..…48

TABLE 8 DESCRIPTIVE STATISTICS OF TOTAL WHOQOL-BREF..…49

TABLE 9: ASSOCIATION OF WHOQOL-BREF WITH STAGES OF PRESSURE INJURY……49

TABLE 10: ASSOCIATION OF BRADEN SCALE TOTAL RISK SCORE WITH STAGES OF PRESSURE INJURY……52

LIST OF FIGURES

FIGURE 1: NPIAP STAGES OF PRESSURE INJURY……11

FIGURE 2: 45 YEARS OLD MALE THORACIC PARAPLEGIC (AIS A) HAD PRESENTED WITH MULTIPLE PRESSURE INJURIES OF VARIOUS STAGES OVER DIFFERENT LOCATIONS OF THE BODY…….26

FIGURE 3: NEUROLOGICAL LEVEL OF INJURY DISTRIBUTION…..32

FIGURE 4a: MODE OF INJURY DISTRIBUTION (NON-TRAUMATIC)..32

FIGURE 4b: MODE OF INJURY DISTRIBUTION (TRAUMATIC)……..33

FIGURE 5: STAGES OF PRESSURE INJURY DISTRIBUTION……..….35

FIGURE 5: ASSOCIATION OF BRADEN SCALE TOTAL RISK SCORE WITH PRESSURE INJURY STAGES……37

FIGURE 6: 30 YEARS OLD CERVICAL TETRAPLEGIC BED-FAST MALE HAD PRESENTED WITH STAGE 3 PRESSURE INJURY……38

FIGURE 7: 35 YEARS OLD THORACIC PARAPLEGIC CHAIR-FAST FEMALE HAD PRESENTED WITH STAGE 4 PRESSURE INJURY……38

FIGURE 8: 50 YEARS OLD MALE PARAPLEGIC WITH URINARY AND FAECAL INCONTINENCE HAD PRESENTED WITH STAGE 3 PRESSURE INJURIES OVER GLUTEAL REGION EXTENDING UP TO PERINEUM……..……39

FIGURE 9: ASSOCIATION OF BRADEN SCALE TOTAL RISK SCORE WITH PRESSURE INJURY STAGES…….41

FIGURE 10: 30 YEARS OLD CERVICAL TETRAPLEGIC AMBULATORY MALE (AIS C) HAD PRESENTED WITH STAGE 2 PRESSURE INJURY…….44

FIGURE 11: 43 YEARS OLD CERVICAL TETRAPLEGIC BED-FAST FEMALE HAD PRESENTED WITH UNSTAGEABLE PRESSURE INJURY……..44

FIGURE 12: 53 YEARS TETRAPLEGIC WITH COMPLETE INJURY (AIS A) HAD PRESENTED WITH STAGE 4 PRESSURE INJURY……..…45

FIGURE 9: ASSOCIATION OF SCIPUS TOTAL RISK SCORE WITH PRESSURE INJURY STAGES…….47

FIGURE 13: ASSOCIATION OF BRADEN SCALE TOTAL RISK SCORE WITH ASIA IMPAIRMENT SCALE……53

FIGURE 14: ASSOCIATION OF SCIPUS TOTAL RISK SCORE WITH ASIA IMPAIRMENT SCALE……55

LIST OF ABBREVIATION

SCI: Spinal Cord Injury

PI: Pressure Injury

DTPI: Deep Tissue Pressure Injury

MBC: Mechanical Boundary Conditions

ST: Susceptibility and Tolerance

ASIA: American Spinal Injury Association

ISCOS: International Standard for Neurological Classification of Spinal Cord Injury

AIS: ASIA Impairment Scale

SLI: Sensory Level of Injury

MLI: Motor Level of Injury

NLI: Neurological Level of Injury

SLI: Skeletal Level of Injury

NPIAP: National Pressure Injury Advisory Panel

WHO: World Health Organization

WHOQOL: World Health Organization Quality of Life

SCIPUS: Spinal Cord Injury Pressure Ulcer

PMR: Physical Medicine and Rehabilitation

1. INTRODUCTION

‘Spinal cord injury' (SCI) is the term used to describe damage to the spinal cord brought on by trauma, disease, or degeneration. This damage can result in temporary or permanent changes to sensation, movement, strength, and bodily functions below the site of the injury. Between 2,50,000 to 5,00,000 cases are thought to occur annually globally (1). Among the complications of spinal cord injury that are frequently seen include pressure injury, autonomic dysreflexia, breathing issues, and neurogenic bowel and bladder. One of the most frequent side effects of spinal cord injury is pressure injury (PI), which has a 32.36% global prevalence (2,3). Due to motor, sensory, and autonomic dysfunction, activity and mobility restriction, general impairment, and mental health state, people with spinal cord injuries are more likely to acquire pressure injury (4).

Pressure alone or combined with sheer can result in localised tissue damage leading to pressure injury. Although they frequently develop over a bony prominence, pressure injuries can also be caused by a device that is either medical or other (5). It may or may not be painful and appear as intact skin or as an open ulcer. In cases of spinal cord injury, the microclimate, nutrition, perfusion, co-morbidities, and soft tissue status may also have an impact on the soft tissue's tolerance for pressure and shear. As it necessitates repeated hospital stays, multiple operations, possibly fatal consequences, higher expenditures for patient care, morbidity, and early mortality, pressure injury has a tremendous impact on the patient and healthcare system. According to information obtained from the National SCI Statistical Centre's annual report, 17.7% of people with SCI were readmitted to the hospital for a PI within their first year of rehabilitation, and by 20 years later, the percentage had risen to

37.4% (6,7,8). In the US, the annual cost of PI-related healthcare is thought to exceed $3 billion. Additionally, it has a negative effect on the individual's quality of life (QoL) on a psychological, physical, and social level (2). In order to evaluate the association of the common risk factors for developing pressure injury with the stage of pressure injury and severity of pressure injury as well as the impact of pressure injury on a person with a spinal cord injury's quality of life, we have designed this study.

2. REVIEW OF LITERATURE

Epidemiology: The worldwide prevalence of pressure injury in public hospitals is 14.8% (9). In contrast, the magnitude of pressure injury only in individuals with spinal cord injury is (26.7-46.2)% in the available literatures (10). The high prevalence of pressure injury among people who have suffered spinal cord injuries can be explained by the population's susceptibility to ischemic changes as well as a variety of sociodemographic factors, suggesting that there are some specific risk factors to watch out for in order to prevent pressure injury in this particular group.

Pathophysiology of pressure injury: Pressure between the bony prominence and the external surface occludes the capillaries. In different segments, the typical capillary pressure ranges from 16 to 33 mmHg. More than 33 mmHg of external pressure causes the blood vessels to close, rendering the underlying and surrounding tissues anoxic. If the pressure persists for a crucial amount of time, cell death will take place, leading to soft tissue necrosis and eventually ulceration (11).

Stages of pressure injury: The National Pressure Injury Advisory Panel (NPIAP) 2019 has mentioned the following stages of pressure injury (5):

Table 1: Stages of pressure injury according to NPIAP 2019 (5)

Stage 1	Non-blanchable erythema of intact skin.
Stage 2	Partial-thickness skin loss with exposed dermis.
Stage 3	Full-thickness skin loss.
Stage 4	Full-thickness loss of skin and deeper tissues up to bone.
Unstageable Pressure Injury	Obscured full-thickness skin and tissue loss by slough or eschar.
Deep Tissue Pressure Injury	Persistent non-blanchable deep red, maroon or purple discoloration.

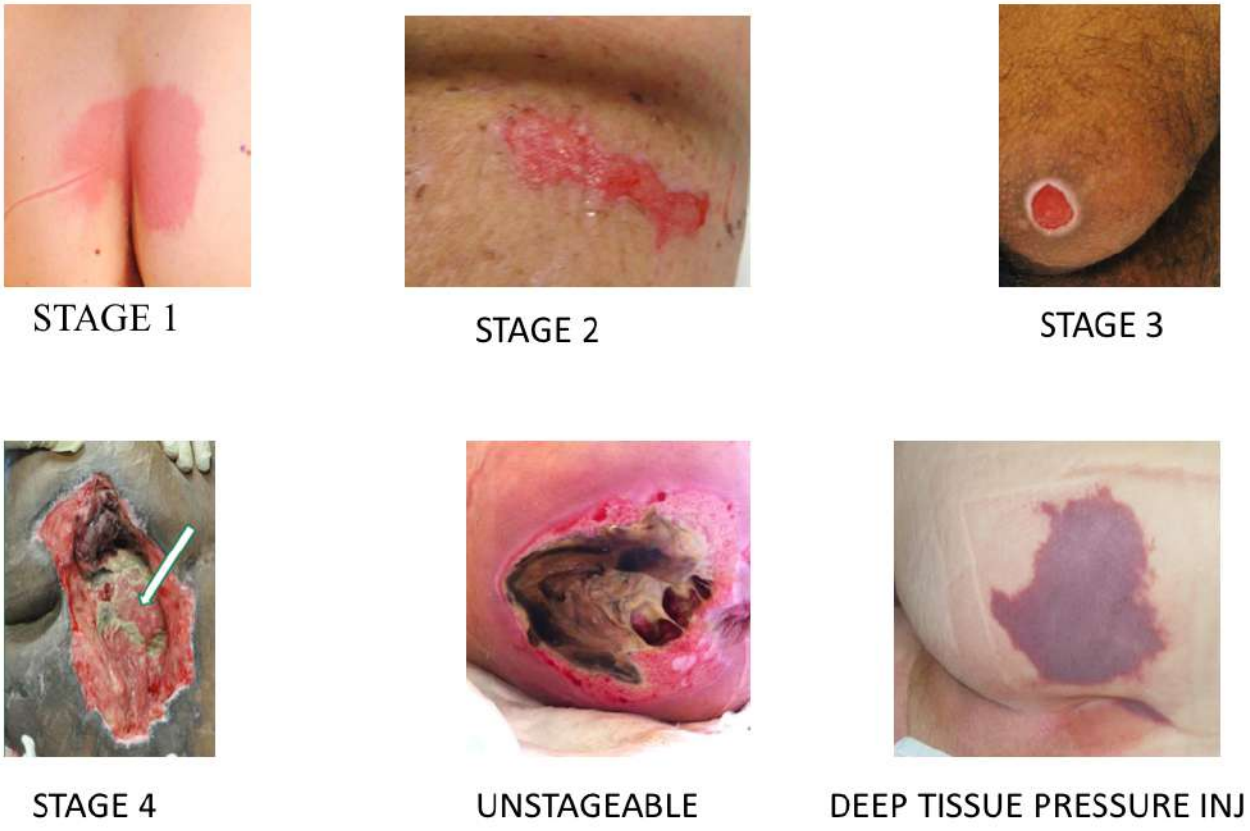


Figure 1: NPIAP Stages of Pressure Injury (5)

LOCATION OF PRESSURE INJURY:

Anywhere on the body can sustain a pressure injury when there are elevated local risk factors. However, they are more prone to occur over dependent areas of different postures or decubitus, as well as when there is insufficient soft tissue coverage over bone prominences. For example, people who are bedridden and spend most of their time supine get pressure sores on their occiput, sacrum, and heels. People who spend so much time sitting on their wheelchairs are more likely to get pressure sores on their heels, ischium, and sacrum.

Multiple pressure injuries over various parts of the body may present in one person. In the study by Irgens et al. in 2020, 39% of the population had two or more PIs (12).

PREVALENCE:

The prevalence of pressure injury varies according to duration since spinal cord injury. According to Eslami et al., individuals with spinal cord injury who had suffered for less than a year had a greater prevalence of pressure injury (45%) than those who had sustained them more than a year ago (35%) (13). According to research by Chen et al., the risk of pressure injury remained constant for the first 10 years following SCI but increased after 15 years (14). The overall prevalence of PI is reported to be higher in the SCI population and numerous studies have discovered elevated risk factors related. Inicio et al. observed a mean Braden score of 11.1 out of 23 among 61 traumatic SCI patients, with notably low sub-scores for sensory perception, moisture, activity and mobility restriction, nutrition, friction, and shear, which demonstrates that the population has a greater risk of developing PI (15).

RISK FACTORS:

There are two types of risk variables: modifiable risk factors and non-modifiable risk factors. Age, sex, race, and other non-modifiable risk variables cannot be changed. Mobility, activity, diet, friction/shear, moisture, temperature, BMI, etc. are examples of modifiable risk variables that are effective in the prevention and management of pressure injury. Additionally, they serve as signals to warn medical staff and other caregivers in order to encourage prevention and early detection. Therefore, the objective of management should be to identify non-modifiable risk variables in order to estimate prognosis and to concentrate more on modifiable risk factors in order to prevent harm from occurring and to manage it if it occurs.

According to the NPIAP 2019 review, those who are at risk may have a variety of risk factors, which are generally categorised as (5);

A. Exposure to damaging mechanical boundary conditions (type, duration, magnitude of the mechanical load)
B. The susceptibility and tolerance of the individual (physiology and repair, properties of skin and tissues, thermal properties, etc.)

Table:2 Risk Factors for Pressure Injury according to NPIAP 2019 (5)

Risk factors	Mechanical boundary conditions (MBC)	Susceptibility and tolerance of the individual (ST)
Activity and mobility limitation	√	
Skin status		√
Perfusion, Circulation, Oxygenation factors		√
Nutrition factors		√
Moisture	√	√
Body temperature		√
Old age	√	√
Sensory perception limitations	√	
Blood markers		√
General and mental health status	√	√
Individuals in operating room	√	√
Critically ill individuals	√	√
Neonates and children	√	√

Numerous investigations have revealed an elevated risk of pressure injury in the elderly (16,17,18). In research by Gourlan et al. in 2020, the mean age at injury was determined to be 48 years (19,20).

In general, pressure injuries occur more frequently in men than in women. In 2020, Igrens et al. hypothesised that two factors, namely increased risk-taking behaviour that persists throughout rehabilitation and reduced fat distribution, may be influencing the increased risk of developing PI in males (12).

According to research by Igrens et al., people with type 1 diabetes (DM1) who receive their diagnosis before suffering a spinal cord injury have an eight-fold higher risk of having PI than people who don't have DM1. They discovered no evidence of elevated PI incidence for DM2. Regarding variations in PI risk between DM1 and DM2, there is scant information in the literature. Irgens et al. claim that in people with DM1 and DM2, neuropathic abnormalities, poor circulation, immunological dysfunction, and renal insufficiency contribute to susceptible alteration in the tissues. In his study, other co-morbidities like hypertension and cardiovascular conditions dramatically raised the incidence of PI (12).

The majority of studies show an increased risk of PI among smokers and alcoholics (21,22). However a few studies refuse this association (12,23).

Igrens et al. hypothesised that in addition to treating PI, knowledge about PI prevention, education, and training for injured individuals as well as their caretakers is important to prevent the occurrence in future. They recognised that isolation at home or in the local hospital, as well as delay in admission to the rehabilitation unit, may lead to increased occurrence of PI in SCI individuals (12).

Limited access to health informatics and resources, lower levels of education, lack of an intimate partner, and unemployment (13), are shown as uni-variable risk factors in earlier studies.

Mobility has been identified in studies as a significant pressure injury risk factor. Salzberg et al. conducted a couple of studies on pressure injury risk factors in SCI individuals and in both the studies he found a decreased level of activity as the most significant risk factor (22,24,25).
Numerous studies have identified friction or shear as well as changes in skin condition as risk factors (26,27,28,29).

A risk factor for developing a new pressure injury is having a prior pressure injury (30,31).

The lack of efficient and inclusive home nursing and home medical services was cited by Eslami et al. in 2012 as a major contributing reason to the increased frequency of PI in his research population (13).

Eslami et al. and Paker et al. revealed that pressure injury affects paraplegics more frequently than the other physiological models, with prevalence rates of 66.8% and 78.8%, respectively. To support this finding, quadriplegics may benefit from caregivers' attention, which helps to prevent PI despite their impairment. Several additional research have shown contradictory findings. Tetraplegics with complete injury presented with considerable risks for pressure injury development during the acute rehabilitation period, in a study conducted by Verschueren et al. (13,32,33).

According to Grigorian et al., those with higher levels of injury had a higher risk for pressure injury than those with lower levels of SCI (34).

Complete injuries with AIS A are reported to have a higher chance of acquiring pressure injury. Irgens et al.'s demonstration of a markedly declining trend in the incidence of PI in SCI individuals from AIS A to AIS D was supported by several investigations (3,12,35).

It is repeatedly stated in numerous studies that sensory deprivation plays a significant role in the development of PI.

In terms of faecal and urine incontinence, researches have shown that the majority of SCI individuals who acquire PI are faecal and urinary incontinent (22). Urinary incontinence was emphasised by Igrens et al. as a crucial risk factor in their study (12). Numerous other research (Brinza et al., Vanderwee et al.) have shown similar findings (35,36).

The use of medical devices like ventilatory assistance devices and many others can give rise to medical device-related PIs noted in prior studies. Igrens et al (12).

To learn what factors protect individuals with SCI from acquiring PI, a few studies were conducted. In such a study in 2019, Sleight et al. found that improving self-advocacy abilities, personal traits, and physical factors, as well as maintaining a healthy weight, eating a healthy diet, exercising, having access to resources, caregivers, and communicating with them, appeared to be protective against the occurrence of PI (37).

There are many scales available to evaluate risk variables, including the Norton, Braden, SCIPUS, and Waterlow scales. For the Braden scale, high sensitivity, specificity, and iterated reliability have been documented. Braden descriptions will be our main scales for evaluating risk variables. The risk factors are not completely covered by the Braden descriptors, so an extra list of risk variables will be evaluated and scored using the SCIPUS (Spinal Cord Injury Pressure Ulcer) scale. The highest number of variables are covered by SCIPUS, which also has good validity and reliability and is specific to spinal cord damage and pressure injury (22,38,39,40,41,42).

ECONOMIC BURDEN:

Along with death, morbidity, and a decline in quality of life, PI causes significant systemic healthcare expenditures. In a study in 2012, Chan et al. attempted to determine the resource consumption and expenses of a community-dwelling SCI individual who was suffering a PI in light of factors such as age, PI history, severity level, location of PI, length of current PI, and PI surface area. The cost of doctors, hospitals, emergency room visits, lab tests, medical and surgical procedures, caregiver salaries, and prescription expenditures are the areas of expenditure. Over $4700 in Canadian dollars is the total average monthly cost per community SCI individual with PI, with PI alone accounting for 63% of the total cost.

A similar study ($9000 Canadian per month) by Allen et al. in 2004 likewise demonstrates a notable rise in spending among SCI patients with PI (43,44).

MANAGEMENT

An avoidable side effect of spinal cord injury is pressure injury. Proper diet, pressure-relieving repositioning, hygiene and moisture control, specific mattresses, and topical skin care are some prevention strategies (45).

Cleaning, dressing, and debridement are all parts of managing a pressure injury once it has been identified. Integument protection and surgery may be required for advanced stages. Other treatment techniques for pressure injury include LASER, ultrasound, negative pressure wound healing, recombinant platelet-derived growth factors, and hyperbaric oxygen (46).

QUALITY OF LIFE:

"Individuals' perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" has been used to describe the quality of life. The ultimate goal of clinical and community-based management is to improve the quality of life (47).

According to research by Degenholtz et al. and Essex et al., pressure damage has a detrimental effect on all facets of quality of life, including significantly lower levels of autonomy, security, spiritual well-being, physical functioning, psychological functioning, emotional status, social role, and depression (48,49).

According to Geyh et al., people with spinal cord injuries have a lower quality of life in terms of their mental health, mobility, employment, total participation, accessibility to the outside world, social support, and coping (50).

In a study conducted among people with traumatic SCI in 2014, Deena et al. showed that PI had a considerable impact on everyday activities and community participation, ultimately contributing to a poor quality of life overall. About 65% of survey participants said their PI had somewhat limited their activities. About 12% of participants said their overall QOL was poor or very poor, 27% said it was fair, and 62% said it was good to very good. Tetraplegics with grade 3 or more had decreased QOL. Those with grade 1 to 2 PI reported 8.8 nights, while those with grade 3 PI reported 17 nights, as opposed to the 4 nights reported by SCI individuals without PI (51,52).

In a study conducted in 2016, Barbosa et al.'s analysis of the WHOQOLbref reveals that the physical domain (53.04) has a very low score, followed by the psychological domain (60.94) and the environmental domain (63.52). The only domain with a respectable score of 70.21 is the social one. According to his research, people with AIS A and PI have a lower quality of life than people with AIS C and D. He also observed that people with AIS A had a lower quality of life, particularly in the physical domain, while people with AIS C and D score poorly in the psychological domain. He put forth the idea that those with pressure injury and AIS A have lower quality of life scores overall (53).

A guy with paraplegia and a stage 4 sacral PI described his limitations on activity participation in a qualitative study by Langemo et al., saying, "… getting to go out, go fishin' or nothin', or doin' whatever you want to do… You're more confined." (54).

NEED FOR THE STUDY:

Prevention of developing pressure injury should remain the mainstay of care provided to an individual with spinal cord injury. Identification of risk factors is of paramount importance. Following our review of the literature, we could identify that there are paucity of data pertaining to the identification of risk factors for developing pressure injury in spinal cord injury and its effect on their quality of life. Therefore, we have designed the study to evaluate prevalent risk factors and their correlation with stages of pressure injury encountered in our setting and how pressure injury affects the quality of life of spinal cord injury individuals.

RESEARCH QUESTIONS:

1) What are the risk factors associated with different stages of pressure injury in individuals with spinal cord injury?
2) Does pressure injury impact the quality of life of the individual with spinal cord injury?

3. AIMS

1) To identify risk factors which can be targeted for preventing pressure injury in spinal cord injury.
2) To assess the quality of life of individual with spinal cord injury with pressure injury.

OBJECTIVES

Primary objectives:

1) To determine the risk factors prevailing in different stages of pressure injury in spinal cord injury individuals based on Spinal Cord Injury Pressure Ulcer Scale (SCIPUS) and Braden scale, at first presentation at a tertiary care hospital.
2) To evaluate the quality of life in spinal cord injured individuals with pressure injury using World Health Organization Quality of Life- BREF (WHOQOL-BREF).

Secondary objectives:

1) To correlate the risk of developing pressure injury, assessed using SCIPUS and Braden scale, with the severity of spinal cord injury based on ASIA impairment scale.
2) To correlate the quality of life in spinal cord injured individuals, assessed using WHOQOL-BREF, with various stages of pressure injury.

4. MATERIALS AND METHODS

A. TYPE OF STUDY: Observational Cross-sectional study

B. ETHICAL CLEARANCE: Ethical clearance was taken from the Institutional Ethics Committee (IEC) of the All India Institute of Medical Sciences, Bhopal.

C. PLACE OF STUDY: Department of Physical Medicine and Rehabilitation, All India Institute of Medical Sciences, Bhopal.

D. PERIOD OF STUDY: The entire duration of the study was eighteen months starting from the date of approval of the ethical committee in February 2022 till the completion of the sample size in July 2023.

E. ALLOCATION: Participants were primarily examined by the principal investigator and after applying the inclusion and exclusion criteria, were enrolled for the study.

F. STUDY POPULATION: Participants with spinal cord injury with pressure injury, admitted in IPD and attending the OPD of AIIMS Bhopal.

G. INCLUSION CRITERIA:

    A. Spinal cord injured individuals with pressure injury above 18 years of age.
    B. All neurological levels of spinal cord injury.
    C. All stages of pressure injury.
    D. Spinal cord injury less than 5 years duration.
    E. Any gender.
    F. Willingness to participate in the study with informed written consent.

H. EXCLUSION CRITERIA:

A. Congenital spinal cord injury including spinal dysraphism.
B. Individuals having cognitive impairments.
C. Individuals having clinical diagnosis of concomitant brain injury and other skeletal fractures.
D. Unwillingness to participate in the study.

I. SAMPLE SIZE:

Based on this study conducted by Scheel-sailer et al. (59), the percentage of grade 4 or 5 pressure injury (p) is 9.6% considering 5% as absolute precision (d). The minimum sample required is 134.

The formula used is:

$$n >= \{Z^2_{1-\alpha/2} \times p\ (1-p)\}/d^2$$

Alpha (α): 0.05
Estimated proportion (p): 0.096
Estimation error (d): 0.05
Critical value (Z): 1.96

$$n >= [(1.96)^2_{1-0.05/2} \times 0.096\ \{1-0.096\}]/\ (0.05)^2$$

J. SELECTION OF CASES: Individuals of spinal cord injury with pressure injury admitted in IPD and attending OPD of the Department of Physical Medicine and Rehabilitation and other departments of AIIMS Bhopal after satisfying the inclusion criteria and obtaining written informed consent were included in this study.

K. EXPLANATION AND REASSURANCE:

The participants were provided a complete verbal explanation of the purpose of the study, the process of the study, its methods, risks and benefits, as well as the protection of confidentiality and the provision of anonymity. In addition, participants received an information sheet (Annexure 1,2) concerning the study and all the questions they were likely to have regarding the study were answered. Participants were informed that their participation in the study was voluntary and that they could refuse to participate or withdraw from the study at any time if they wished without it affecting the health services they were receiving. Participants were reassured that there would be no impact on their standard treatment, and participation or non-participation in the study would not affect their relationship with the hospital staff or the doctor treating them. All participants were explained about the procedure followed in the study protocol to dispel any misconceptions.

L. CONSENT:

Before collection, participants who had agreed to participate were asked to sign the consent form (Annexure 3,4). A copy of the consent form and information sheet were then provided to the participants, which contained details of how to contact the investigator. An informed written consent (in English/Hindi language) was taken from all individuals, who participated in this study.

M. HISTORY AND EXAMINATION:

All the participants were evaluated using a questionnaire and clinical examination. Subjects were questioned through semi-structured interview by the principal investigator in the IPD and OPD of AIIMS Bhopal. Demographic factors recorded were age, sex, residence, education, occupation and income. A complete history regarding the mode and duration of spinal cord injury, duration of pressure injury, history of medical conditions like diabetes, hypertension, cardiopulmonary, renal disease, anaemias, hypoproteinaemia/ hypoalbuminaemia, and history of addictions were taken.

Examination were included for determining the level of spinal cord injury, completeness of spinal cord injury, examination of pressure injury, number, location and staging of pressure injury, neurological, functional and nutritional status.

Figure 2: A 45 years old male thoracic paraplegic (AIS A) had presented with multiple pressure injuries of various stages over different locations of the body

N. INVESTIGATIONS:

Investigations included Haemoglobin, Haematocrits, Random Blood Sugar, Serum Albumin and Total Proteins. These were routine investigations required for the management of pressure injury.

O. ETHICAL ISSUES AND CONFIDENTIALITY:

The study was commenced after prior permission from the Institutional Ethical Committee, AIIMS Bhopal. Brief information about the research was provided to the study participants through a participant information sheet. No data collection was done without written informed consent. Confidentiality of information was maintained by the following measures. All information taken from the participants was kept confidential, and the identity of the participants or details regarding their conditions or habits were not revealed without their prior consent in writing. Only analysed results of the study were published without referring to specific participant's personal particulars or data. The informations given by the participants were considered as a matter of trust and were accessible to the investigator and guides and no one else.

P. EVALUATION AND ANALYSIS:

Data collection was done based on history, physical examinations, relevant investigations and using standard scales. Scales were based on standard questionnaires, that were interviewed by the principal investigator on the occasion of data collection.

The level of spinal cord injury was determined according to the ASIA Impairment Scale (AIS) developed by the American Spinal Injury Association (ASIA) in collaboration with the International Standards for

Neurological Classification of Spinal Cord Injury and the International Spinal Cord Society (ISCOS). (Annexure 7)

Staging of pressure injury was done according to the National Pressure Injury Advisory Panel (NPIAP 2019) guidelines.

Risk factor assessment for pressure injury in spinal cord injury was done by Braden scale and SCIPUS scale. (Annexure 8,9)

Quality of life assessment was done by using the WHOQOL BREF (Annexure 10,11)

Q. STUDY TOOLS:

Study Proforma

ASIA Impairment Scale

NPIAP staging for pressure injury

Braden scale for pressure injury risk factors assessment

SCIPUS scale for pressure injury risk factors assessment

WHOQOL BREF for quality-of-life assessment

R. STATISTICAL ANALYSIS:

The presentation of the Categorical variables was done in the form of numbers and percentages (%). On the other hand, the quantitative data were presented as the means ± SD and as median with 25th and 75th percentiles (interquartile range). The following statistical tests were applied for the results:

1. The association of the variables which were quantitative in nature were analysed using the Independent t-test (for two groups) and the ANOVA test (for more than two groups).
2. The association of the variables which were qualitative in nature were analysed using the Chi-Square test. If any cell had an expected value of less than 5 then the Fisher's exact test was used.
3. Spearman rank correlation coefficient was used for the correlation of WHO QOL with number of injuries.

The data entry was done in the Microsoft EXCEL spreadsheet and the final analysis was done with the use of Statistical Package for Social Sciences (SPSS) software, IBM manufacturer, Chicago, USA, ver 25.0.

For statistical significance, p-value of less than 0.05 was considered statistically significant.

5. RESULTS

Table 3: Demographic data distribution

Demographic categories	Frequency	Percentage
Age		
18-30	54	40.30%
31-40	24	17.91%
41-50	24	17.91%
51-60	21	15.67%
61-70	7	5.22%
71-80	4	2.99%
Gender		
Female	31	23.13%
Male	103	76.87%
Educational level		
No schooling	16	11.94%
Upto 5th	15	11.19%
6th to 8th	31	23.13%
9th to 12th	49	36.57%
Graduate/postgraduate	23	17.16%
Occupation		
Unemployed	11	8.21%
Student	15	11.19%
Homemaker	22	16.42%
Retired railway employee	1	0.75%
Labour	48	35.82%
Businessman	2	1.49%
Semiskilled	8	5.97%
Skilled	6	4.48%
Professional	21	15.67%

Neurological level of injury		
Cervical	47	35.08%
Upper thoracic	14	10.45%
Lower thoracic	45	33.58%
Lumbar	28	20.89%
Mode of Injury		
Traumatic	89	66.42%
Non Traumatic	45	33.58%

The most common age group was 18 to 30 years in which there were 40.30% individuals while the least common age group was 71-80 with 2.99% individuals.

Hundred and three (76.87%) participants were male while only thirty-one (23.13%) were female.

Ninety-five (70.89%) participants had received schooling, 17.16% were either graduate or post-graduate and only 11.94% participants had never gone to school.

The most common occupation among the participants was Labour with a frequency of 48 (35.82%). Only 8.21% of participants were unemployed.

The most common NLI was C4 (14.93%) followed by D12 and L1 (13.43% each). Eighty-seven individuals were paraplegic (64.93%) while forty-seven individuals were tetraplegic (35.07%).

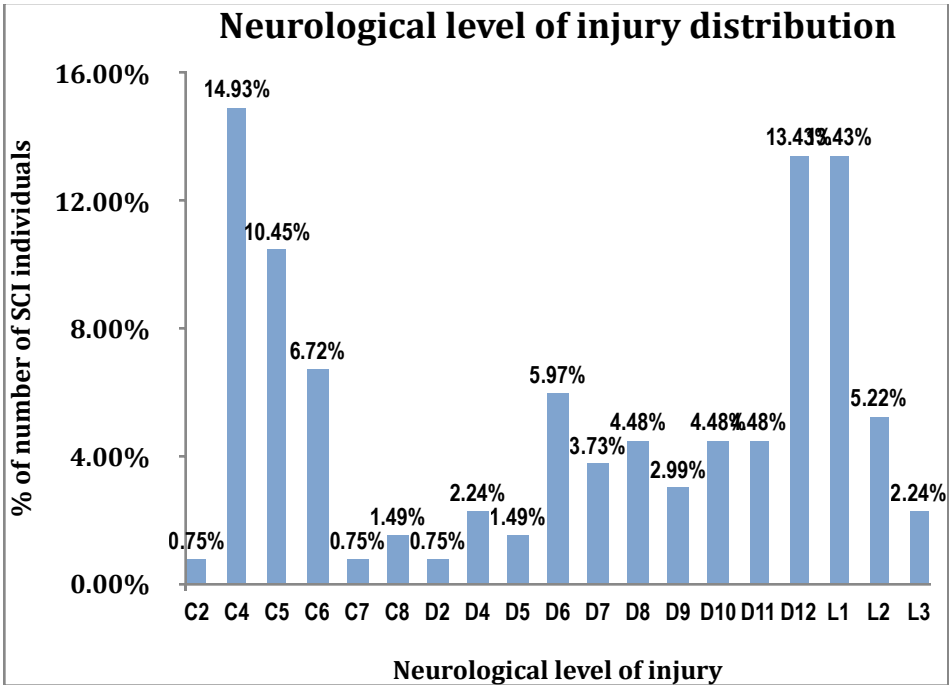


Figure 3: Neurological level of injury distribution.

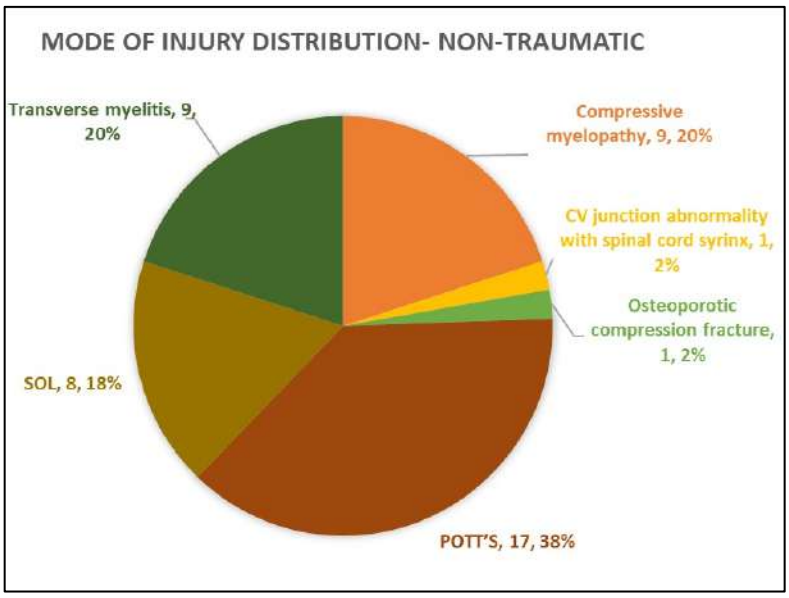

MODE OF INJURY DISTRIBUTION- NON-TRAUMATIC
Transverse myelitis, 9, 20%
Compressive myelopathy, 9, 20%
CV junction abnormality with spinal cord syrinx, 1, 2%
Osteoporotic compression fracture, 1, 2%
SOL, 8, 18%
POTT'S, 17, 38%

Figure 4a:-Mode of injury distribution (Non-traumatic)

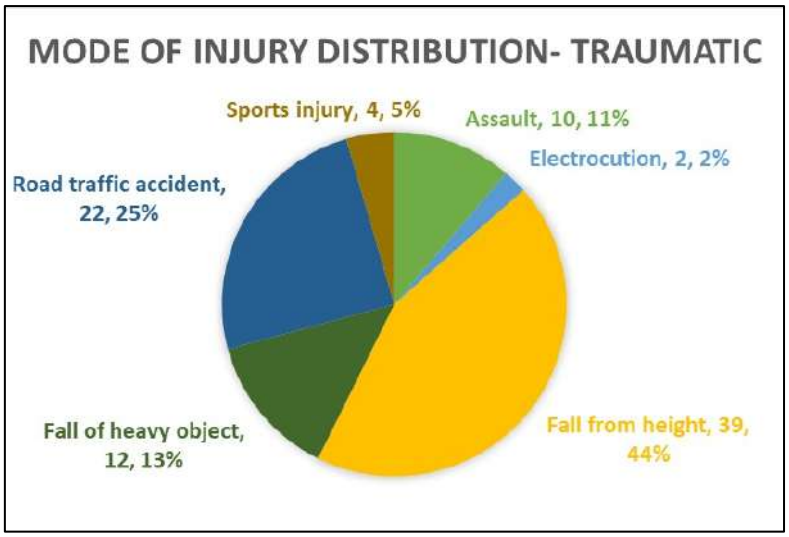

MODE OF INJURY DISTRIBUTION- TRAUMATIC
Sports injury, 4, 5%
Assault, 10, 11%
Electrocution, 2, 2%
Road traffic accident, 22, 25%
Fall of heavy object, 12, 13%
Fall from height, 39, 44%

Figure 4b: Mode of injury distribution (Traumatic)

Coming to the mode of injury, traumatic injury (66.42%) accounted for almost twice the number of non-traumatic injury (33.58%). Among traumatic modes of injury, fall from height counted the most (26.12%). Among non-traumatic modes of injury, Pott's spine contributed the maximum of 12.69%.

Table 4: ASIA impairment scale(AIS) distribution

ASIA impairment scale(AIS)	Frequency	Percentage
A	74	55.22%
B	28	20.90%
C	20	14.93%
D	12	8.96%
Total	134	100.00%

Seventy-four individuals (55.22%) had complete neurological injury with AIS A while 60 individuals (44.78) had incomplete injury. Among the incomplete injury, the most common was AIS B (20.90%) followed by AIS C (14.93) and AIS D (8.96)

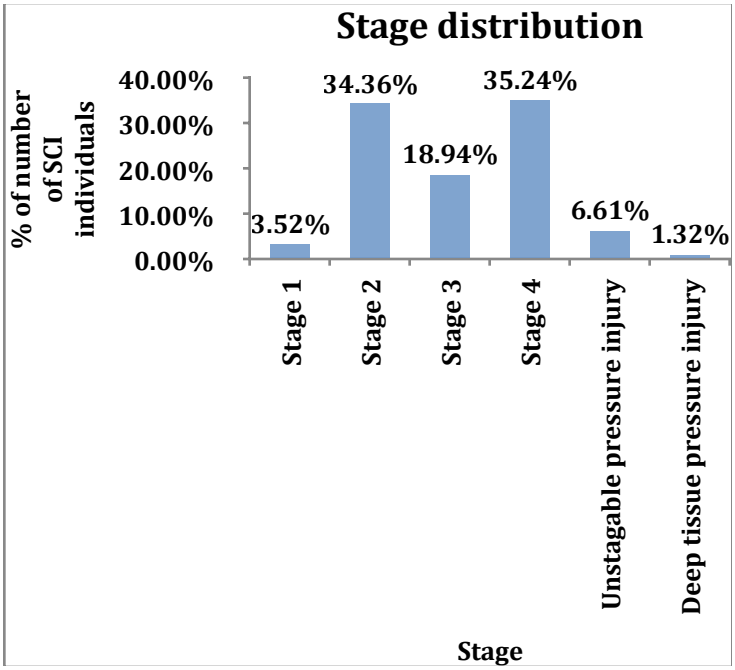


Figure 5: Stage of pressure injury distribution

A total of two hundred and twenty-seven pressure injuries were located. As high as eighty (35.24%) pressure injuries presented as stage 4, seventy-eight (34.36%) as stage 2, forty-three (18.94%) as stage 3, fifteen (6.61%) unstable, eight (3.52%) stage 1 and three (1.32%) deep tissue pressure injury.

Table 5: Association of Braden Scale risk factor with stage of pressure injury

Braden scale{Risk factor}	**Stage 1(n=8)**	**Stage 2(n=78)**	**Stage 3(n=43)**	**Stage 4(n=80)**	**Unstageable pressure injury(n=15)**	**Deep tissue pressure injury(n=3)**	**Total**	**P value**
Sensory perception								
Completely limited	3 (37.50 %)	44 (56.41 %)	28 (65.12 %)	49 (61.25 %)	8 (53.33%)	2 (66.67%)	134 (59.03%)	0.381*
Very limited	1 (12.50 %)	17 (21.79 %)	9 (20.93 %)	20 (25%)	6 (40%)	1 (33.33%)	54 (23.79%)	
Slightly limited	4 (50%)	17 (21.79 %)	6 (13.95 %)	11 (13.75 %)	1 (6.67%)	0 (0%)	39 (17.18%)	
Activity								
Bedfast	3 (37.50 %)	26 (33.33 %)	22 (51.16 %)	33 (41.25 %)	9 (60%)	1 (33.33%)	94 (41.41%)	0.02*
Chairfast	5 (62.50 %)	40 (51.28 %)	18 (41.86 %)	46 (57.50 %)	6 (40%)	1 (33.33%)	116 (51.10%)	
Walks occasionally	0 (0%)	12 (15.38 %)	3 (6.98 %)	1 (1.25 %)	0 (0%)	1 (33.33%)	17 (7.49%)	

Moisture								
Constantly moist	6 (75%)	40 (51.28%)	25 (58.14%)	49 (61.25%)	13 (86.67%)	2 (66.67%)	135 (59.47%)	<.0001*
Often moist	0 (0%)	17 (21.79%)	4 (9.30%)	12 (15%)	1 (6.67%)	0 (0%)	34 (14.98%)	
Occasionally moist	0 (0%)	6 (7.69%)	2 (4.65%)	0 (0%)	0 (0%)	1 (33.33%)	9 (3.96%)	
Rarely moist	2 (25%)	15 (19.23%)	12 (27.91%)	19 (23.75%)	1 (6.67%)	0 (0%)	49 (21.59%)	
Mobility								
Completely immobil	0 (0%)	17 (21.79%)	13 (30.23%)	19 (23.75%)	4 (26.67%)	0 (0%)	53 (23.35%)	0.059*
Very limited	8 (100%)	51 (65.38%)	27 (62.79%)	60 (75%)	11 (73.33%)	2 (66.67%)	159 (70.04%)	
Slightly limited	0 (0%)	10 (12.82%)	3 (6.98%)	1 (1.25%)	0 (0%)	1 (33.33%)	15 (6.61%)	
Nutrition								
Very poor	0 (0%)	1 (1.28%)	1 (2.33%)	1 (1.25%)	1 (6.67%)	0 (0%)	4 (1.76%)	0.084*
Probably inadequate	8 (100%)	74 (94.87%)	42 (97.67%)	79 (98.75%)	14 (93.33%)	2 (66.67%)	219 (96.48%)	
Adequate	0 (0%)	3 (3.85%)	0 (0%)	0 (0%)	0 (0%)	1 (33.33%)	4 (1.76%)	

Friction/shear								
Problem	6 (75%)	50 (64.10 %)	39 (90.70 %)	73 (91.25 %)	15 (100%)	2 (66.67%)	185 (81.50%)	<.0001 *
Potential problem	2 (25%)	28 (35.90 %)	4 (9.30 %)	7 (8.75 %)	0 (0%)	1 (33.33%)	42 (18.50%)	

Sensory Perception: There was no significant association between sensory perception and the stage of pressure injuries (P = 0.381). However, the majority of participants in all stages had limited sensory perception to some degree.

Activity: The P value (P = 0.02) suggested a statistically significant association between activity and the stage of pressure injuries. Participants who were "Bedfast" were more likely to be in Stage 3 or higher, while those who were "Chairfast" were more likely to be in Stage 4.

Figure 6: 30 years old cervical tetraplegic bed-fast male had presented with stage 3 pressure injury

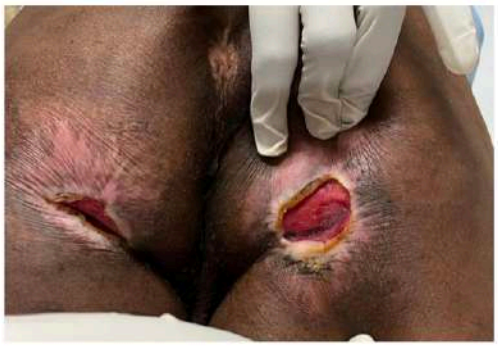


Figure 7: 35 years old thoracic paraplegic chair-fast female had presented with stage 4 pressure injury

Moisture: This risk factor evaluates the moisture level of the individual's skin. The P value (<.0001) indicated a highly significant association between moisture and the stage of pressure injuries. Individuals with "Constantly moist" skin were more likely to be in a higher stage of pressure injury.

Figure 8: 50 years old male paraplegic with urinary and faecal incontinence had presented with stage 3 pressure injuries over gluteal region extending upto perineum

Mobility: The P value (P = 0.059) suggested a weak association between mobility and the stage of pressure injuries. "Very limited" mobility was more common in higher stages of pressure injuries.

Nutrition: The P value (P = 0.084) suggested no significant association between nutrition and the stage of pressure injuries.

Friction/Shear: The P value (<.0001) indicated a highly significant association between friction/shear and the stage of pressure injuries. Individuals with a "Problem" related to friction/shear were more likely to be in a higher stage of pressure injury.

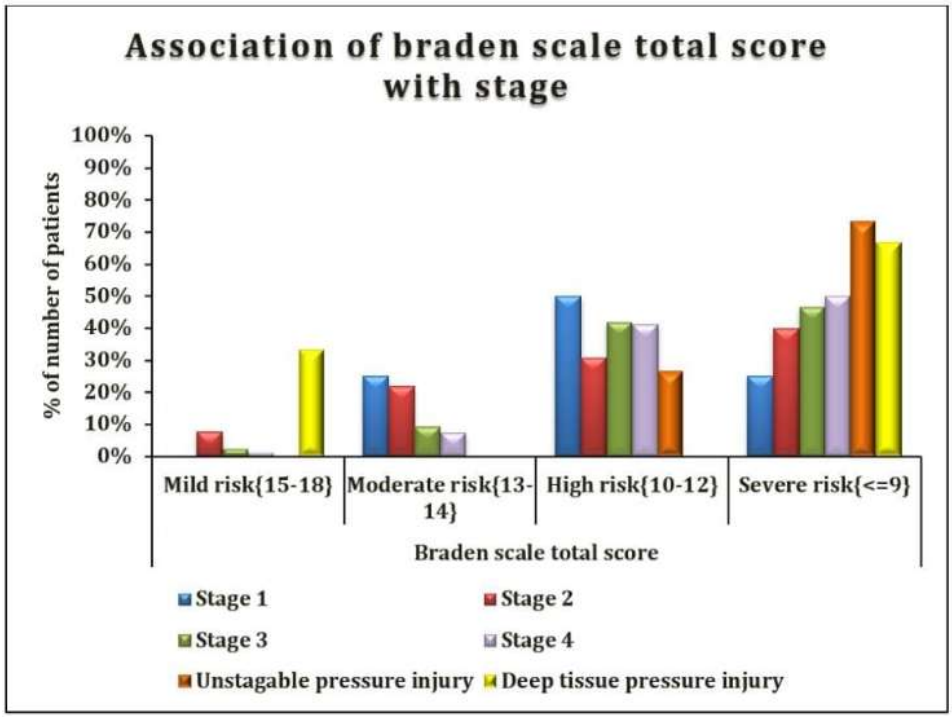


Figure 9: Association of Braden Scale total score with pressure injury stage

According to the Braden scale total score, participants with stage 1 pressure injury had no participants with mild risk, 25% with moderate risk, 50% with high risk and 25% severe risk. participants with stage 2 pressure injury had 7.69% participants with mild risk, 21.79% with moderate risk, 30.77% with high risk and 39.74% with severe risk. Of those participants who had stage 3 pressure injury, 2.33% participants had mild risk, 9.30% had moderate risk, 41.86% had high risk and 46.51% with severe risk. In stage 4 pressure injury, 1.25% of participants had mild risk, 7.50% had moderate risk, 41.25% had high risk and 50% had severe risk. The severe risk was seen in 73.33% of participants with unstable pressure injury and 66.67% of participants with deep tissue injury.

Table 6: Association of SCIPUS risk factor with stage of pressure injury

SCIPUS{Risk factor}	Stage 1(n=8)	Stage 2(n=78)	Stage 3(n=43)	Stage 4(n=80)	Unstageable pressure injury(n=15)	Deep tissue pressure injury (n=3)	Total	P value
Mobility								
Limited	8 (100%)	61 (78.21%)	30 (69.77%)	61 (76.25%)	11 (73.33%)	3 (100%)	174 (76.65%)	0.535*
Immobile	0 (0%)	17 (21.79%)	13 (30.23%)	19 (23.75%)	4 (26.67%)	0 (0%)	53 (23.35%)	
Level of activity								
Ambulatory	0 (0%)	12 (15.38%)	3 (6.98%)	1 (1.25%)	0 (0%)	1 (33.33%)	17 (7.49%)	0.02*
Wheelchair	5 (62.50%)	40 (51.28%)	18 (41.86%)	46 (57.50%)	6 (40%)	1 (33.33%)	116 (51.10%)	
Bed	3 (37.50%)	26 (33.33%)	22 (51.16%)	33 (41.25%)	9 (60%)	1 (33.33%)	94 (41.41%)	
Age(years)								
<=34	5 (62.50%)	35 (44.87%)	26 (60.47%)	41 (51.25%)	7 (46.67%)	2 (66.67%)	116 (51.10%)	0.907*
35 to 64	3 (37.50%)	37 (47.44%)	15 (34.88%)	33 (41.25%)	8 (53.33%)	1 (33.33%)	97 (42.73%)	
>=65	0 (0%)	6 (7.69%)	2 (4.65%)	6 (7.50%)	0 (0%)	0 (0%)	14 (6.17%)	

Tobacco use/smoking								
Never	5 (62.50%)	52 (66.67%)	31 (72.09%)	56 (70%)	14 (93.33%)	3 (100%)	161 (70.93%)	0.791*
Former	3 (37.50%)	21 (26.92%)	9 (20.93%)	18 (22.50%)	1 (6.67%)	0 (0%)	52 (22.91%)	
Current	0 (0%)	5 (6.41%)	3 (6.98%)	6 (7.50%)	0 (0%)	0 (0%)	14 (6.17%)	
Complete SCI	4 (50%)	38 (48.72%)	31 (72.09%)	58 (72.50%)	9 (60%)	1 (33.33%)	141 (62.11%)	0.016*
Urine incontinence/ constantly moist	6 (75%)	63 (80.77%)	31 (72.09%)	61 (76.25%)	14 (93.33%)	3 (100%)	178 (78.41%)	0.554*
Autonomic dysreflexia/severe spasticity	0 (0%)	23 (29.49%)	9 (20.93%)	17 (21.25%)	4 (26.67%)	1 (33.33%)	54 (23.79%)	0.431*
Pulmonary disease	0 (0%)	2 (2.56%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (0.88%)	0.369*
Cardiac disease/ ABN. EKG	0 (0%)	4 (5.13%)	1 (2.33%)	3 (3.75%)	0 (0%)	0 (0%)	8 (3.52%)	0.93*
Diabetes/ glucose>=110	1 (12.50%)	8 (10.26%)	3 (6.98%)	7 (8.75%)	0 (0%)	0 (0%)	19 (8.37%)	0.804*
Renal disease	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	NA
Impaired cognitive function	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	NA
In a nursing home/hospital	8 (100%)	78 (100%)	43 (100%)	80 (100%)	15 (100%)	3 (100%)	227 (100%)	NA

Albumin<3.4/ Total protein<6.4	3 (37.50%)	29 (37.18%)	14 (32.56%)	30 (37.50%)	9 (60%)	1 (33.33%)	86 (37.89%)	0.59*
Hemoglobin<12/ Hematocrit<36	3 (37.50%)	34 (43.59%)	18 (41.86%)	49 (61.25%)	11 (73.33%)	1 (33.33%)	116 (51.10%)	0.052*

Mobility: The P value (P = 0.535) suggested that there was no significant association between mobility and the stage of pressure injuries. Individuals with "Limited" mobility were distributed across all stages.

Level of Activity: The P value (P = 0.02) indicated a statistically significant association between the level of activity and the stage of pressure injuries. Participants who were "Ambulatory" were more likely to be in Stage 1 or 2, while those who were in "Wheelchair" or "Bed" were more likely to be in higher stages.

Figure 10: 30 years old cervical tetraplegic ambulatory male (AIS C) had presented with stage 2 pressure injury

Figure 11: 43 years old cervical tetraplegic bed-fast female had presented with unstageable pressure injury

Age (years): The P value (P = 0.907) suggested no significant association between age and the stage of pressure injuries.

Tobacco Use/Smoking: The table suggested that there was no significant association between tobacco use or smoking and the stage of pressure injuries (P = 0.791).

Complete SCI (Spinal Cord Injury): There was a statistically significant association between complete SCI and the stage of pressure injuries (P = 0.016). Participants with complete SCI were more likely to be in higher stages.

Figure 12: 53 years tetraplegic with complete injury (AIS A) had presented with stage 4 pressure injury

Urine Incontinence/Constantly Moist: There was no significant association between urine incontinence and the stage of pressure injuries (P = 0.554). This risk factor was widely distributed across all the stages.

Autonomic Dysreflexia/Severe Spasticity: This risk factor assessed neurological conditions. There was no significant association between autonomic dysreflexia/severe spasticity and the stage of pressure injuries (P = 0.431).

Pulmonary Disease: There was no significant association between pulmonary disease and the stage of pressure injuries (P = 0.369).

Cardiac Disease/ABN. EKG: There was no significant association between cardiac disease and the stage of pressure injuries (P = 0.93).

Diabetes/Glucose>=110: There was no significant association between diabetes/glucose levels and the stage of pressure injuries (P = 0.804).

Renal Disease and Impaired Cognitive Function: These two risk factors had no participant in any stage.

Albumin<3.4/Total Protein<6.4 and Hemoglobin<12/Hematocrit<36: These risk factors showed no significant associations with the stage of pressure injuries (P = 0.59 and P = 0.052, respectively).

Thus, risk factors like level of activity and complete SCI were associated with the stage of pressure injuries, while other factors such as age, tobacco use, and various medical conditions did not show significant association.

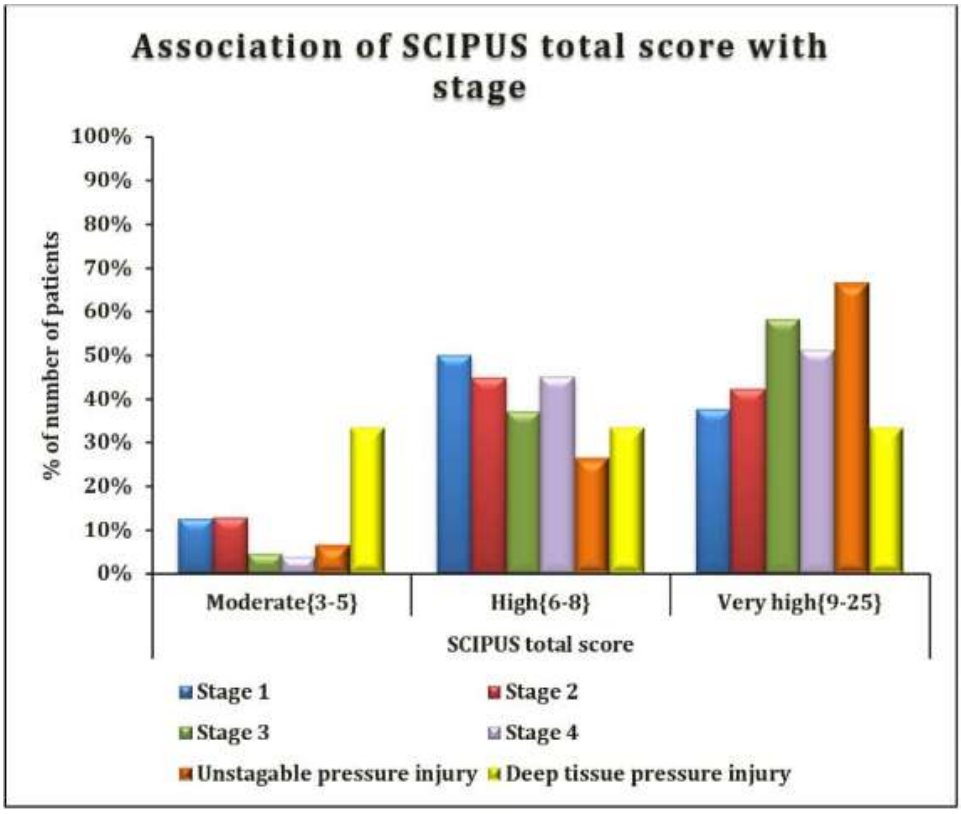


Figure 13: Association of SCIPUS total score with stage of pressure injury

According to SCIPUS total score, 12.50% of stage 1 pressure injuries had moderate risk, 50% high risk and 37.50 % had very high risk. In stage 2 pressure injury, 12.82% had moderate risk, 44.87% had high risk, and 42.31% had very high risk. In stage 3 pressure injury, 4.65% had moderate risk, 37.21% had high risk, and 58.14% had very severe risk. For those with stage 4 pressure injury, moderate risk was seen in 3.75%, high risk in 45% and very high risk in 51.25%. Of those with unstageable pressure injury, 66.67% had very high risk. In deep pressure injury, moderate, high and very high risk were equally seen.

Table 7: Descriptive statistics of WHOQOL-BREF

WHOQOL-BREF	Mean ± SD	Median(25th-75th percentile)	Range
Physical health domain	15.43 ± 3.53	15(13-17)	10-29
Psychological domain	18.29 ± 3.03	18(17-20)	10-25
Social relationship domain	10.57 ± 1.68	11(9-12)	7-15
Environment domain	27.96 ± 4.89	29(27-31)	3-36

The maximum impact was seen in the social relationship domain with the mean score as low as 11 (range 7-15), followed by the physical domain with a mean score of 15 (range 10-29) and the psychological domain with a mean score of 18 (range 10-25). The environmental domain was affected the least with a mean score of 29 (range 3-36).

Table 8: Descriptive statistics of total WHOQOL-BREF

Variable	Mean ± SD	Median(25th-75th percentile)	Range
Total WHOQOL-BREF	73.03 ± 9	72(66-79)	55-111

Overall quality of life was compromised with a median score of 72 (range 55-111) among the study population.

Table 9: Association of WHOQOL-BREF with stage of pressure injury

WHOQOL-BREF	Stage 1(n=8)	Stage 2(n=78)	Stage 3(n=43)	Stage 4(n=80)	Unstageable pressure injury(n=15)	Deep tissue pressure injury(n=3)	Total	P value
Physical health domain								
Mean ± SD	15.38 ± 2.45	14.95 ± 2.91	15.07 ± 2.79	16.1 ± 4.02	14.67 ± 3.56	19 ± 8.89	15.43 ± 3.48	0.116§
Median(25th-75th percentile)	16(13.5-17.25)	15(12.25-17)	15(13-16.5)	16(12-18)	14(12-16.5)	16(14-22.5)	15(12.5-17)	
Range	12-18	10-22	10-22	10-25	11-25	12-29	10-29	
Psychological domain								
Mean ± SD	17.88 ± 3.64	17.88 ± 3.24	18.28 ± 2.83	18.16 ± 3	17.4 ± 2.13	20 ± 4.36	18.05 ± 3.03	0.773§
Median(25th-75th percentile)	18.5(17.5-20)	18(17-19.75)	18(17-20)	18(17-19)	18(15.5-19)	18(17.5-21.5)	18(17-20)	
Range	10-22	10-24	11-24	11-25	14-22	17-25	10-25	

Social relationship domain								
Mean ± SD	9.75 ± 1.58	10.81 ± 1.6	10.88 ± 1.48	10.69 ± 1.49	9.8 ± 1.57	11.33 ± 2.08	10.68 ± 1.56	0.091§
Median(25th-75th percentile)	9.5(8.75-10.5)	11(9.25-12)	11(10-12)	11(10-12)	10(9-11)	12(10.5-12.5)	11(9-12)	
Range	8-12	7-15	9-15	7-14	7-12	9-13	7-15	
Environment domain								
Mean ± SD	26.88 ± 4.85	28.47 ± 4.53	28.65 ± 2.79	27.78 ± 4.51	26.47 ± 7.31	25.33 ± 3.21	28.03 ± 4.49	0.385§
Median(25th-75th percentile)	28(24.75-30.25)	29(27-32)	28(27-30.5)	28(26.75-31)	29(25-30)	24(23.5-26.5)	29(27-31)	
Range	17-32	3-36	19-34	3-34	3-33	23-29	3-36	

In stage 1 pressure injury, WHOQOL-BREF mean score for the physical domain was 15.38 ± 2.45, in the psychological domain was 17.88 ± 3.64, in the social relationship was 9.75 ± 1.58 and in the environmental domain was 26.88 ± 4.85.

In stage 2 pressure injury the mean score in the physical domain was 14.95 ± 2.91, in the psychological domain was 7.88 ± 3.24, in the social relationship domain was 10.81 ± 1.6 and in the environmental domain was 28.47 ± 4.53

In stage 3 pressure injury the mean score in the physical domain was 15.07 ± 2.79, in the psychological domain was 18.28 ± 2.83, in the social relationship domain was 10.88 ± 1.48 and in the environmental domain was 28.65 ± 2.79.

In stage 4 pressure injury the mean score in the physical domain was 16.1 ± 4.02, in the psychological domain was 18.16 ± 3, in the social relationship domain was 10.69 ± 1.49 and in the environmental domain was 27.78 ± 4.51.

In unstageable pressure injury the mean score in the physical domain was 14.67 ± 3.56, in the psychological domain was 17.4 ± 2.13, in the social relationship domain was 9.8 ± 1.57 and in the environmental domain was 26.47 ± 7.31.

In deep tissue pressure injury, the mean score in the physical domain was 19 ± 8.89, in the psychological domain was 20 ± 4.36, in the social relationship domain was 11.33 ± 2.08 and in the environmental domain was 25.33 ± 3.21.

The difference in mean in different domains was not statistically significant.

Table 10: Association of Braden Scale total score with ASIA impairment scale(AIS)

Braden scale total score	A(n=74)	B(n=28)	C(n=20)	D(n=12)	Total	P value
Mild risk{15-18}	0 (0%)	0 (0%)	1 (5%)	7 (58.33%)	8 (5.97%)	<.0001*
Moderate risk{13-14}	5 (6.76%)	0 (0%)	10 (50%)	5 (41.67%)	20 (14.93%)	
High risk{10-12}	27 (36.49%)	17 (60.71%)	9 (45%)	0 (0%)	53 (39.55%)	
Severe risk{<=9}	42 (56.76%)	11 (39.29%)	0 (0%)	0 (0%)	53 (39.55%)	
Mean ± SD	9.39 ± 1.82	9.96 ± 1.64	12.35 ± 1.23	15.08 ± 1.38	10.46 ± 2.43	<.0001§
Median(25th-75th percentile)	9(8-11)	10.5(9-11)	13(11-13)	15(14-16.25)	10.5(9-12)	
Range	6-14	7-12	10-15	13-17	6-17	

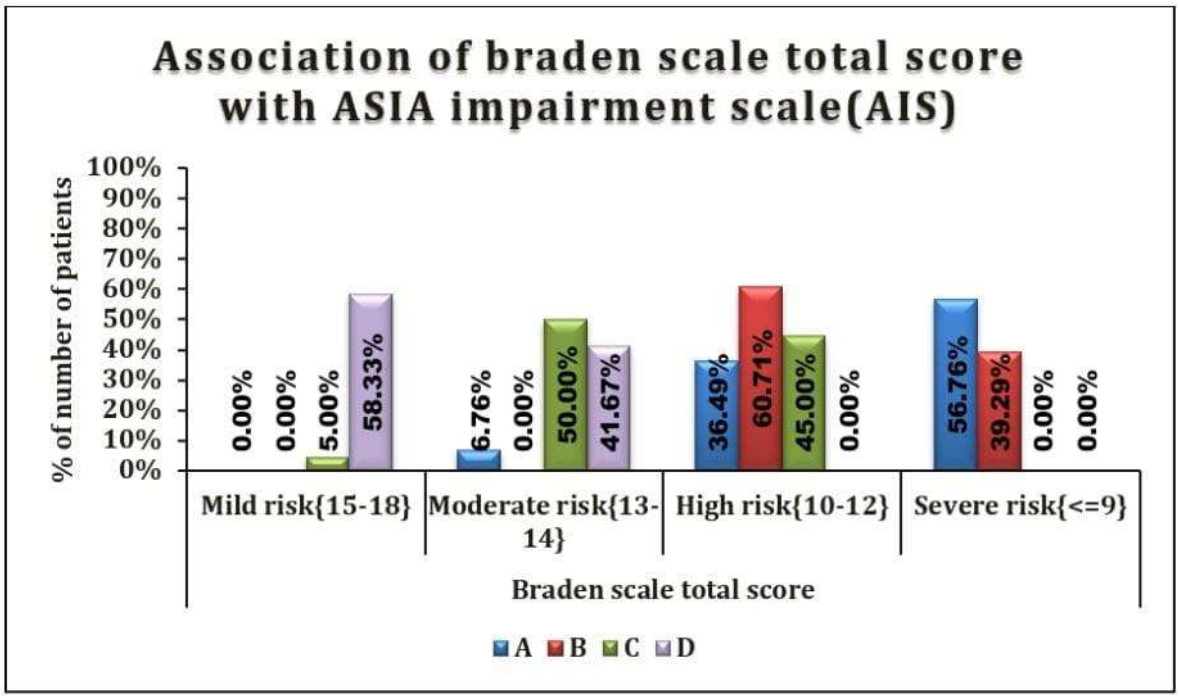


Figure 14: Association of Braden Scale total score with ASIA Impairment Scale(AIS)

According to the Braden scale, the majority of AIS A participants (56.76%) had severe risk, 60.71% of AIS B participants had high risk, 50% of AIS C participants had moderate risk and 58.33% of AIS D participants had mild risk. The difference in proportions in different AIS groups was statistically significant.

Table 11: Association of SCIPUS total score with ASIA Impairment Scale(AIS)

SCIPUS total score	A(n=74)	B(n=28)	C(n=20)	D(n=12)	Total	P value
Moderate{3-5}	1 (1.35%)	1 (3.57%)	6 (30%)	7 (58.33%)	15 (11.19%)	<.0001*
High{6-8}	22 (29.73%)	17 (60.71%)	12 (60%)	4 (33.33%)	55 (41.04%)	
Very high{9-25}	51 (68.92%)	10 (35.71%)	2 (10%)	1 (8.33%)	64 (47.76%)	
Mean ± SD	10.43 ± 2.63	8.07 ± 2.34	6.65 ± 1.63	5.75 ± 1.54	8.96 ± 2.93	<.0001§
Median(25th-75th percentile)	11(8-12)	7.5(6-9.25)	7(5-8)	5(5-6.25)	8(7-11)	
Range	5-16	5-15	4-10	4-9	4-16	

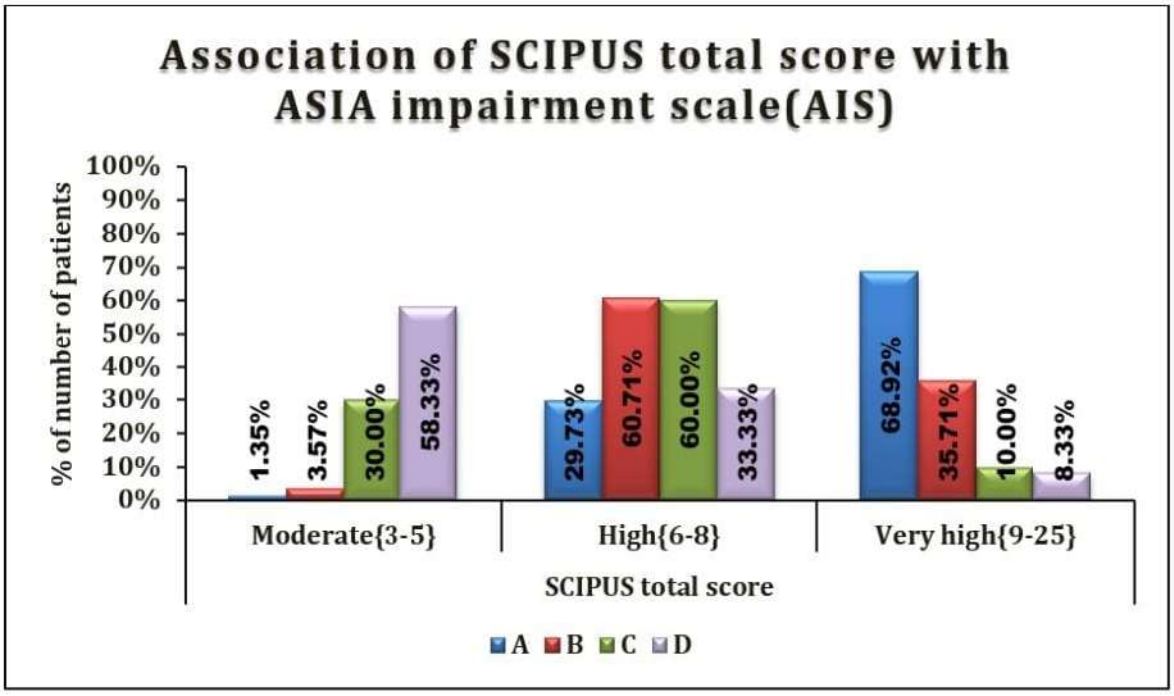


Figure 15: Association of SCIPUS total score with ASIA Impairment Scale(AIS)

According to the SCIPUS total score, 68.92% of AIS A participants had very high risk, 60.71% of AIS B participants had high risk, 60% of AIS C participants had high risk and 58.33% of AIS D participants had moderate risk. The difference in proportions in different AIS groups was statistically significant.

6. DISCUSSION

This observational was conducted at AIIMS Bhopal between February 2022 and October 2023 to assess the risk factors prevailing in different stages of pressure injury in spinal cord injury individuals and to evaluate the quality of life in this group of individuals. Our findings shed light on several important aspects of this population's well-being and the factors contributing to their QoL.

In our study, the largest proportion of individuals fell within the 18-30 years age group, accounting for 40.30% of the sample. Previous studies have often reported a high incidence of pressure injuries in younger adults with SCI, particularly in the age group of 18-30, which is similar to our results (35). The majority of participants were males accounting for 76.87%. This is in accordance with the findings of several investigators who have found a greater incidence of pressure injury among males (35,50,55). Males often have a higher prevalence of SCI due to traumatic causes, which might contribute to this gender parity. Nearly 36.57% of participants in our study had completed their education up to high school level. This represents a substantial portion of the sample with a higher level of formal education. A smaller but significant group, around 17.16% had pursued education beyond high school while 11.94% had to formal schooling. In a previous study by Eslami et al. in 2012, it was found that the majority (24.1%) of SCI participants with PI belonged to the illiterate group. Similar observations are found in various other studies (13,32,56). Although it may seem that those with higher education should have a lower incidence of pressure injury, the reason for the contrary result in

our study might be due to a lack of healthcare awareness among those with lower education who might not seek healthcare services. The majority (35.82%) of our participants were labourers. Labour-intensive jobs often involve tasks that carry a higher risk of accidents and traumatic injuries, including falls, vehicle accidents and heavy lifting. Limited access to adequate preventive measures, such as ergonomic equipment or the ability to take regular breaks to relieve pressure can contribute to an elevated risk of pressure injuries. In our study, paraplegics were found to have more pressure injuries than tetraplegics which were similar to the findings of Eslami et al. and Verschueren et al. but contrary to the results stated by Grigorian et al. who found the incidence to be more in cervical level injury (13,33,34,55). Among tetraplegics, C4 was the most common neurological level of injury while among paraplegics, D12 and L1 was the most common neurological level of injury. Although paraplegics have higher mobility of the upper body, ability to shift weights and lesser sensory loss, the higher incidence of pressure injury in these individuals might be due to increased shear forces during transfers or improper seating system. About two-thirds of participants had traumatic spinal cord injury. Among those who had traumatic spinal cord injury fall from height was the most common cause accounting for 26.12%, followed by RTA accounting for 16.42%. In a study by Taghipoor et al, a similar higher prevalence of pressure injury in traumatic cases with a percentage of 71.8% was seen (57). Among non-traumatic causes, Pott's spine was the most common cause accounting for 12.69%. Participants with traumatic spinal cord injury or Pott's spine often undergo spinal surgeries which may increase the chances of immobility and thus the risk of developing pressure injuries.

The majority of participants in all stages had limited sensory perception to some degree. Limited sensory perception can increase the risk of pressure injury development. When individuals cannot feel pressure or discomfort in certain areas of their body, they may not shift their position or relieve pressure regularly. This prolonged pressure on tissues can lead to reduced blood flow and tissue damage, ultimately resulting in pressure injuries. Those individuals must use preventive measures like frequent position changes, specialised cushions and regular skin inspection to mitigate the risk of pressure injuries. Participants who were "Bedfast" were more likely to be in Stage 3 or higher, while those who were “Chair-fast" were more likely to be in Stage 4. The act of sitting down or shifting in a chair can generate friction and chair surfaces usually have less padding than mattresses which might be the reason why being chair-fast was associated with stage 4 while bedfast was more likely in stage 3. A greater percentage of pressure injuries in chair-fast individuals was found compared to bedfast ones and a similar result was found by Aldermen et al. in their study (58). A weak association was found between mobility and the stage of pressure injuries. "Very limited" mobility was more common in higher stages of pressure injuries. Those who had constant moisture were more likely to have higher-stage pressure injury. Being constantly moist due to bladder and bowel incontinence weakens skin integrity and makes it more susceptible to damage from pressure and friction Participants with a "Problem" related to friction/shear were more likely to be in a higher stage of pressure injury. Friction and shear are particularly problematic for individuals with limited mobility as they may experience friction when they are repositioned and moved. Friction can damage the outer layers of skin and make it vulnerable to injury. Shear forces occur when an individual slides or moves, causing skin to move in one direction while the underlying tissue stays

more or less in place. This leads to stretching and tearing of tissues and blood vessels, increasing the risk of pressure injury. In our study, 76.12% of individuals were having friction and shear problems; the rest 23.88% were also having potential problems. Minimising friction and shear by using proper lifting and transfer techniques is important to prevent pressure injury development.

No significant association was seen between the stage of pressure injuries and Tobacco Use/Smoking, age, spasticity pulmonary or cardiac disease, renal disease, hypoproteinaemia and anaemia.

Complete injury was found to have a greater risk than incomplete injury, with 55.22% of participants belonging to the AIS A group. A strong association was found between the severity of spinal cord injury (AIS) and the Braden Scale as well as the SCIPUS total score. Individuals with more severe spinal cord injuries (AIS A) were at higher risk for pressure injuries, while those with less severe injuries (AIS D) were at a lower risk. Individuals with complete injury often have limited or no mobility and rely on caregivers for regularly repositioning them, providing proper seating and support surfaces and performing thorough skin inspections and thus have a heightened risk of pressure injuries. In a study by Irgens et at. a decreasing trend in pressure injuries was seen from AIS A to D similar to our results (12,55).

Quality of life as assessed by WHOQOL-BREF showed that all domains like physical, pyschological, social relationship and environmental domain were affected due to pressure injury in spinal cord injury. The most affected domain

was social relationship. This was contrary to the findings of Barbosa et al, who concluded that dissatisfaction especially in the physical domain was most evident (53). There was no significant association between WHOQOL-BREF and the stage of pressure injury. Individuals with SCI in India often face social stigma and misconceptions about their condition. Traditional beliefs about disability may contribute to negative attitudes and discrimination. Accessibility remains a significant challenge in many parts of India. Lack of accessible infrastructure, public transportation, and buildings can hinder social participation for individuals with SCI. In Indian culture, family plays a central role. The impact of SCI on family dynamics can be significant. Family support is crucial, but the caregiving burden may strain relationships, and the individual with SCI may experience changes in their role within the family. Economic disparities can exacerbate the challenges. Addressing these challenges requires a comprehensive approach involving improvements in infrastructure, healthcare services, education, awareness, and changes in societal attitudes. Advocacy for the rights and inclusion of individuals with SCI is vital for creating a more supportive and accessible environment.

7. SUMMARY

In this study, the demographic data, the association of risk factors of pressure injury with stage of pressure injury and severity of spinal cord injury and quality of life of participants was assessed. One hundred and thirty-four participants were enrolled.

The participants' age ranged between 19 years to 77 years, the mean age being 38.65 and the most common age group was 18-30 years.

The majority of participants (76.87%) were male.

The majority of participants had received some education from school with only a minor population of 11.94% belonging to the group who never attended any school.

The most common occupation associated with pressure injury in spinal cord-injured individuals was found to be labour with 35.82% of participants being labourers.

The majority of participants were paraplegics (64.93%) and only 35.07% were tetraplegics. Among tetraplegics, the most common neurological level of injury was C4 while among paraplegics, the most common neurological level of injury was D12 and L1.

The majority of cases were traumatic (66.42%). Fall from height was the most common mode of injury (26.12%).

Pressure injury was more common in complete injury, with 55.22% of individuals belonging to AIS A.

Most of the pressure injuries belonged to stage 4 (35.24%) followed by stage 2 (34.46%).

The majority of participants in all stages had limited sensory perception to some degree. Participants who were "Bedfast" were more likely to be in Stage 3 or higher, while those who were “Chair-fast" were more likely to be in Stage 4.

A weak association was found between mobility and the stage of pressure injuries. "Very limited" mobility was more common in higher stages of pressure injury.

Those who had constant moisture were more likely to have higher stage pressure injury. Participants with a "Problem" related to friction/shear were more likely to be in a higher stage of pressure injury.

Participants with complete SCI were more likely to be in higher stages.

Factors such as age, tobacco use, nutrition, and various medical conditions did not show a significant association with the stage of pressure injury

Each domain of quality of life like physical, psychological, social and environmental, were affected due to pressure injury in SCI individuals and the social relationship domain was affected the most.

According to Braden and SCIPUS total score, the risk decreased from AIS A to D and the association was significant.

There was no statistically significant association between quality of life and stage of PI.

8. STRENGTH

To the best of my knowledge, this is the first study comparing the risk factors with the stages of pressure injury and ASIA impairment scale along with quality of life. Also, this is the first study on pressure injury in spinal cord injury individuals conducted in central India.

LIMITATION

The measures taken to reduce the modifiable risk factors were not assessed in this study.

9. CONCLUSION

Bedfast individuals are more likely to develop stage 3 or higher pressure injury and chair-fast individuals are more likely to develop stage 4 pressure injury.

Those who have constant moisture are likely to develop higher stage pressure injury, most likely being unstageable pressure injury.

Friction as a “problem” is associated with stage 4 pressure injury.

Individuals with complete SCI were more likely to be in higher stages.

The risk of developing pressure injury is reduced from AIS A to D.

Each domain of Quality of life is affected by pressure injuries in spinal cord injury individuals and the social domain is the most severely affected.

10. FUTURE SCOPE

Standard operating protocols can be developed to reduce the modifiable risk factors associated with the higher stages of pressure injury in spinal cord injury individuals so that pressure injuries can be prevented from progressing to higher stages.

11. REFERENCES

1. Bennett J, M Das J, Emmady PD. Spinal Cord Injuries. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 [cited 2023 Oct 7]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK560721/

2. Shiferaw WS, Akalu TY, Mulugeta H, Aynalem YA. The global burden of pressure ulcers among patients with spinal cord injury: a systematic review and meta-analysis. BMC Musculoskeletal Disorders. 2020 May 29;21(1):334.

3. McKinley, William O., Amie B. Jackson, Diana D. Cardenas, and Michael J. De Vivo. "Long-Term Medical Complications after Traumatic Spinal Cord Injury: A Regional Model Systems Analysis." *Archives of Physical Medicine and Rehabilitation*, Spinal Cord Injury, 80, no. 11 (November 1, 1999): 1402–10. https://doi.org/10.1016/S0003-9993(99)90251-4.

4. Li, C., N. D. DiPiro, Y. Cao, Y. Szlachcic, and J. Krause. "The Association between Metabolic Syndrome and Pressure Ulcers among Individuals Living with Spinal Cord Injury." *Spinal Cord* 54, no. 11 (November 2016): 967–72. https://doi.org/10.1038/sc.2016.53.

5. "Prevention and Treatment of Pressure Ulcers/Injuries: The Protocol for the Second Update of the International Clinical Practice Guideline 2019 - ClinicalKey." Accessed August 17, 2023. https://www.clinicalkey.com/#!/content/playContent/1-s2.0-S0965206X18301190?returnurl=https:%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0965206X18301190%3Fshowall%3Dtrue&referrer=https:%2F%2Fpubmed.ncbi.nlm.nih.gov%2F.

6. Pressure ulcers: What to do if preventive management fails: Postgraduate Medicine: Vol 77, No 6 [Internet]. [cited 2023 Oct 8]. Available from: https://www.tandfonline.com/doi/abs/10.1080/00325481.1985.11698993

7. Regan MA, Teasell RW, Wolfe DL, Keast D, Mortenson WB, Aubut JAL. A Systematic Review of Therapeutic Interventions for Pressure Ulcers After Spinal Cord Injury. Archives of Physical Medicine and Rehabilitation. 2009 Feb 1;90(2):213–31.

8. Carlson M, Vigen CLP, Rubayi S, Blanche EI, Blanchard J, Atkins M, et al. Lifestyle intervention for adults with spinal cord injury: Results of the USC–RLANRC Pressure Ulcer Prevention Study. J Spinal Cord Med. 2019 Jan;42(1):2–19.

9. Mutairi, Khalid Bander, and Delia Hendrie. "Global Incidence and Prevalence of Pressure Injuries in Public Hospitals: A Systematic Review." *Wound Medicine* 22 (September 1, 2018): 23–31. https://doi.org/10.1016/j.wndm.2018.05.004

10. Pedroso, Bruno, Luiz Alberto Pilatti, and Dálcio Roberto dos Reis. "Cálculo dos escores e estatística descritiva do WHOQOL-100 utilizando o Microsoft Excel." *Revista Brasileira de Qualidade de Vida* 1, no. 1 (December 1, 2009). https://doi.org/10.3895/S2175-08582009000100003

11. Agrawal, Karoon, and Neha Chauhan. "Pressure Ulcers: Back to the Basics." *Indian Journal of Plastic Surgery* 45, no. 02 (May 2012): 244–54. https://doi.org/10.4103/0970-0358.101287.

12. Irgens, Ingebjørg, Jana M. Hoff, Rolf Jelnes, Marcalee Alexander, Johan K. Stanghelle, Magne Thoresen, and Tiina Rekand. "Spinal Cord Injury and Development of Pressure Injury during Acute Rehabilitation in Norway: A National Retrospective Cross-Sectional Study." *Spinal Cord* 58, no. 10 (October 2020): 1069–79. https://doi.org/10.1038/s41393-020-0465-z.

13. Eslami, V, S Saadat, R Habibi Arejan, A R Vaccaro, S M Ghodsi, and V Rahimi-Movaghar. "Factors Associated with the Development of Pressure Ulcers after Spinal Cord Injury." *Spinal Cord* 50, no. 12 (December 2012): 899–903. https://doi.org/10.1038/sc.2012.75.

14. Chen, Yuying, Michael J. DeVivo, and Amie B. Jackson. "Pressure Ulcer Prevalence in People With Spinal Cord Injury: Age-Period-Duration Effects." *Archives of Physical Medicine and Rehabilitation* 86, no. 6 (June 2005): 1208–13. https://doi.org/10.1016/j.apmr.2004.12.023.

15. DeJong G, Hsieh CHJ, Brown P, Smout RJ, Horn SD, Ballard P, et al. Factors Associated with Pressure Ulcer Risk in Spinal Cord Injury Rehabilitation. American Journal of Physical Medicine & Rehabilitation. 2014 Nov;93(11):971.

16. Barros MA de, Sousa S de MA de, Costa ALB, Azevedo PR, Rabelo PPC. AVALIAÇÃO DO RISCO E PREVENÇÃO DE ÚLCERA POR PRESSÃO EM PACIENTES COM LESÃO MEDULAR / RISK ASSESSMENT AND PREVENTION OF PRESSURE ULCER IN PATIENTS WITH SPINAL CORD INJURY. Revista de Pesquisa em Saúde [Internet]. 2013 Oct 2 [cited 2023 Aug 24];14(1). Available from: http://periodicoseletronicos.ufma.br/index.php/revistahuufma/article/view/1725

17. Bergstrom N, Braden B, Kemp M, Champagne M, Ruby E. Multi-site Study of Incidence of Pressure Ulcers and the Relationship Between Risk Level, Demographic Characteristics, Diagnoses, and Prescription of Preventive Interventions. Journal of the American Geriatrics Society. 1996 Jan;44(1):22–30.

18.New PW, Rawicki HB, Bailey MJ. Nontraumatic spinal cord injury rehabilitation: pressure ulcer patterns, prediction, and impact11No commercial party having a direct financial interest in the results of the research supporting this article has or will confer a benefit upon the author(s) or upon any organization with which the author(s) is/are associated. Archives of Physical Medicine and Rehabilitation. 2004 Jan;85(1):87–93.

19.Bergquist-Beringer S, Gajewski BJ. Outcome and Assessment Information Set Data That Predict Pressure Ulcer Development in Older Adult Home Health Patients. Advances in Skin & Wound Care. 2011 Sep;24(9):404–14.

20.“‘What Pressure Ulcers Mean to Me?’ Representations of Pressure Ulcer in Persons with Spinal Cord Injury: A Qualitative Study - ClinicalKey.” Accessed October 8, 2023. https://www.clinicalkey.com/#!/content/playContent/1-s2.0-S0965206X20301017?returnurl=https:%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0965206X20301017%3Fshowall%3Dtrue&referrer=https:%2F%2Fpubmed.ncbi.nlm.nih.gov%2F.

21.Tate, Denise G., Martin B. Forchheimer, James S. Krause, Michelle A. Meade, and Charles H. Bombardier. “Patterns of Alcohol and Substance Use and Abuse in Persons with Spinal Cord Injury: Risk Factors and Correlates1.” *Archives of Physical Medicine and Rehabilitation* 85, no. 11 (November 1, 2004): 1837–47. https://doi.org/10.1016/j.apmr.2004.02.022.

22.Salzberg, C. Andrew, Daniel W. Byrne, C. Gene Cayten, Paul van Niewerburgh, Jane G. Murphy, and Maricela Viehbeck. “A NEW PRESSURE ULCER RISK ASSESSMENT SCALE FOR INDIVIDUALS WITH SPINAL CORD INJURY1.” *American Journal of Physical Medicine & Rehabilitation* 75, no. 2 (April 1996): 96.Guihan, Marylou, and Charles H. Bombardier.

23.Prevalence of pressure sores in a community sample of spinal injury patients - P Raghavan, W A Raza, Y S Ahmed, M A Chamberlain, 2003 [Internet]. [cited 2023 Oct 13]. Available from: https://journals.sagepub.com/doi/abs/10.1191/0269215503cr692oa?journalCode=crea

24.Guihan M, Bombardier CH. Potentially modifiable risk factors among veterans with spinal cord injury hospitalized for severe pressure ulcers: a descriptive study. J Spinal Cord Med. 2012 Jul;35(4):240–50.

25.Brandeis GH, Ooi WL, Hossain M, Morris JN, Lipsitz LA. A Longitudinal Study of Risk Factors Associated with the Formation of Pressure Ulcers in Nursing Homes. Journal of the American Geriatrics Society. 1994 Apr;42(4):388–93.

26.De Laat EH, Schoonhoven L, Pickkers P, Verbeek AL, Van Achterberg T. Implementation of a new policy results in a decrease of pressure ulcer frequency. International Journal for Quality in Health Care. 2006 Apr 1;18(2):107–12.

27.Halfens RJG, Van Achterberg T, Bal RM. Validity and reliability of the Braden scale and the influence of other risk factors: a multi-centre prospective study. International Journal of Nursing Studies. 2000 Aug;37(4):313–9.

28.Allman RM. Pressure Ulcer Risk Factors Among Hospitalized Patients With Activity Limitation. JAMA. 1995 Mar 15;273(11):865.

29.Schnelle JF, Adamson GM, Cruise PA, Al-Samarrai N, Sarbaugh FC, Uman G, et al. Skin Disorders and Moisture in Incontinent Nursing Home Residents: Intervention Implications. Journal of the American Geriatrics Society. 1997 Oct;45(10):1182–8.

30.DeJong G, Hsieh CHJ, Brown P, Smout RJ, Horn SD, Ballard P, et al. Factors Associated with Pressure Ulcer Risk in Spinal Cord Injury Rehabilitation. American Journal of Physical Medicine & Rehabilitation. 2014 Nov;93(11):971.

31.De Souza DMST, De Gouveia Santos VLC. Incidence of Pressure Ulcers in the Institutionalized Elderly. Journal of Wound, Ostomy & Continence Nursing. 2010 May;37(3):272–6.

32.Paker, Nurdan, Derya Soy, Nur Kesiktaş, Ayşe Nur Bardak, Metin Erbil, Sedef Ersoy, and Hürriyet Ylmaz. "Reasons for Rehospitalization in Patients with Spinal Cord Injury: 5 Years' Experience." *International Journal of Rehabilitation Research* 29, no. 1 (March 2006): 71–76. https://doi.org/10.1097/01.mrr.0000185953.87304.2a.

33.Verschueren, J H M, M W M Post, S De Groot, L H V Van Der Woude, F W A Van Asbeck, and M Rol. "Occurrence and Predictors of Pressure Ulcers during Primary In-Patient Spinal Cord Injury Rehabilitation." *Spinal Cord* 49, no. 1 (January 2011): 106–12. https://doi.org/10.1038/sc.2010.66.

34.Zakrasek EC, Creasey G, Crew JD. Pressure ulcers in people with spinal cord injury in developing nations. Spinal Cord. 2015 Jan;53(1):7–13.

35.Brienza, D., S. Krishnan, P. Karg, G. Sowa, and A. L. Allegretti. "Predictors of Pressure Ulcer Incidence Following Traumatic Spinal Cord Injury: A Secondary Analysis of a Prospective Longitudinal Study." *Spinal Cord* 56, no. 1 (January 2018): 28–34. https://doi.org/10.1038/sc.2017.96.

36.Vanderwee, Katrien, Maria Grypdonck, Dirk De Bacquer, and Tom Defloor. "The Identification of Older Nursing Home Residents Vulnerable for Deterioration of Grade 1

Pressure Ulcers: *Risk Factors Deterioration Grade 1 Pressure Ulcer*." *Journal of Clinical Nursing* 18, no. 21 (November 2009): 3050–58. https://doi.org/10.1111/j.1365-2702.2009.02860.x.

37. Sleight, Alix G., Alison M. Cogan, Valerie A. Hill, Elizabeth A. Pyatak, Jesus Díaz, Lucía I. Floríndez, Jeanine Blanchard, Cheryl Vigen, Susan L. Garber, and Florence A. Clark. "Factors Protecting Against Pressure Injuries in Medically Underserved Adults With Spinal Cord Injury: A Qualitative Study." *Topics in Spinal Cord Injury Rehabilitation* 25, no. 1 (2019): 31–40. https://doi.org/10.1310/sci2501-31.

38. Bergstrom, Nancy, and Barbara J. Braden. "Predictive Validity of the Braden Scale Among Black and White Subjects:" *Nursing Research* 51, no. 6 (November 2002): 398–403. https://doi.org/10.1097/00006199-200211000-00008.

39. Management of Chronic Pressure Ulcers. Ont Health Technol Assess Ser. 2009 Jul 1;9(3):1–203.

40. Bergquist-Beringer S, Gajewski BJ. Outcome and Assessment Information Set Data That Predict Pressure Ulcer Development in Older Adult Home Health Patients. Advances in Skin & Wound Care. 2011 Sep;24(9):404–14.

41. Wellard S, Lo SK. Comparing Norton, Braden and Waterlow risk assessment scales for pressure ulcers in spinal cord injuries. Contemporary Nurse. 2000 Jun;9(2):155–60.

42. the SCIRE Research Team, Mortenson WB, Miller WC. A review of scales for assessing the risk of developing a pressure ulcer in individuals with SCI. Spinal Cord. 2008 Mar;46(3):168–75.

43. Chan BC, Nanwa N, Mittmann N, Bryant D, Coyte PC, Houghton PE. The average cost of pressure ulcer management in a community dwelling spinal cord injury population. Int Wound J. 2012 Jun 21;10(4):431–40.

44. Carlson M, Vigen CLP, Rubayi S, Blanche EI, Blanchard J, Atkins M, et al. Lifestyle intervention for adults with spinal cord injury: Results of the USC–RLANRC Pressure Ulcer Prevention Study. J Spinal Cord Med. 2019 Jan;42(1):2–19.

45. Hashim NM, Engkasan JP, Hasnan N. The impact of a pressure ulcer prevention educational program based on the health belief model for persons with spinal cord injury. J Spinal Cord Med. 45(6):898–906.

46. Al Aboud AM, Manna B. Wound Pressure Injury Management. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 [cited 2023 Aug 17]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK532897/

47.WHOQOL - Measuring Quality of Life| The World Health Organization [Internet]. [cited 2023 Oct 12]. Available from: https://www.who.int/tools/whoqol

48.Rosen J, Mittal V, Degenholtz H, Castle N, Mulsant BH, Hulland S, et al. Ability, Incentives, and Management Feedback: Organizational Change to Reduce Pressure Ulcers in a Nursing Home. Journal of the American Medical Directors Association. 2006 Mar;7(3):141–6.

49.Essex HN, Clark M, Sims J, Warriner A, Cullum N. Health-related quality of life in hospital inpatients with pressure ulceration: Assessment using generic health-related quality of life measures. Wound Repair and Regeneration. 2009 Nov;17(6):797–805.

50.Geyh, S, C Ballert, A Sinnott, S Charlifue, A Catz, J M D'Andrea Greve, and M W M Post. "Quality of Life after Spinal Cord Injury: A Comparison across Six Countries." *Spinal Cord* 51, no. 4 (April 2013): 322–26. https://doi.org/10.1038/sc.2012.128.

51.Lala D, Dumont FS, Leblond J, Houghton PE, Noreau L. Impact of Pressure Ulcers on Individuals Living With a Spinal Cord Injury. Archives of Physical Medicine and Rehabilitation. 2014 Dec 1;95(12):2312–9.

52.Alderden J, Cummins M, Pepper G, Whitney J, Wilson A, Butcher R, et al. Mid-range Braden Subscale Scores are Associated with Increased Risk for Pressure Injury Development among Critical Care Patients. J Wound Ostomy Continence Nurs. 2017;44(5):420–8.

53.Barbosa, Milainy. "Quality of Life in Patients with Spinal Cord Injury and Pressure Ulcers." *Enfermería Global*, 2016.

54.Langemo, D. K., H. Melland, D. Hanson, B. Olson, and S. Hunter. "The Lived Experience of Having a Pressure Ulcer: A Qualitative Analysis." *Advances in Skin & Wound Care* 13, no. 5 (2000): 225–35.

55.Krause, J. Stuart. "Skin Sores after Spinal Cord Injury: Relationship to Life Adjustment." *Spinal Cord* 36, no. 1 (January 1998): 51–56. https://doi.org/10.1038/sj.sc.3100528.

56.Noreau, Luc, Pierre Proulx, Lisette Gagnon, Mélanie Drolet, and Marie-Thérèse Laramée. "Secondary Impairments After Spinal Cord Injury: A Population-Based Study." *American Journal of Physical Medicine & Rehabilitation* 79, no. 6 (November 2000): 526–35. https://doi.org/10.1097/00002060-200011000-00009.

57. Taghipoor, Keyvan Davatgaran, Roya Habibi Arejan, Mohammad Reza Rasouli, Soheil Saadat, Mojgan Moghadam, Alexander R. Vaccaro, and Vafa Rahimi-Movaghar. "Factors Associated with Pressure Ulcers in Patients with Complete or Sensory-Only Preserved Spinal Cord Injury: Is There Any Difference between Traumatic and Nontraumatic Causes?" *Journal of Neurosurgery. Spine* 11, no. 4 (October 2009): 438–44. https://doi.org/10.3171/2009.5.SPINE08896.

58. Alderden, Jenny, Mollie Cummins, Ginette Pepper, JoAnne Whitney, Andrew Wilson, Ryan Butcher, Yingying Zhang, and Donna Thomas. "Mid-Range Braden Subscale Scores Are Associated with Increased Risk for Pressure Injury Development among Critical Care Patients." *Journal of Wound, Ostomy, and Continence Nursing : Official Publication of The Wound, Ostomy and Continence Nurses Society* 44, no. 5 (2017): 420–28. https://doi.org/10.1097/WON.0000000000000349"Prevalence of Pressure Sores in a Community Sample of Spinal Injury Patients - PubMed." Accessed October 8, 2023. https://pubmed.ncbi.nlm.nih.gov/14682560/.

59. Scheel-Sailer A, Wyss A, Boldt C, Post MW, Lay V. Prevalence, location, grade of pressure ulcers and association with specific patient characteristics in adult spinal cord injury patients during the hospital stay: a prospective cohort study. Spinal Cord. 2013 Nov;51(11):828–33.

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 1

PARTICIPANT INFORMATION SHEET (PIS)

Dear Sir/Madam,
You are requested to participate in a study titled "An observational study to assess the risk factors and quality of life in spinal cord injury individuals with pressure injury".

Post-Graduate Student:
Dr. Prasenjit Bhadra,
Junior Resident (Academics),
Department of Physical Medicine and Rehabilitation,
All India Institute of Medical Sciences Bhopal,
Saket Nagar, Bhopal.

Guide:
Dr. Virendra K Verma**,**
Associate Professor,
Department of Orthopaedics**,**
All India Institute of Medical Sciences Bhopal,
Saket Nagar, Bhopal.

We appreciate your time and attention regarding the present study. We are inviting you to take part in this which is all about your participation. Your participation in the study is not compulsory. If you don't want to take part, you don't have to give a reason, and it won't affect the work you do. If you do want to take part now but change your mind later, you can pull out of the study at any time. Only if you agree to take part in this study, you will be asked to sign the Consent forms.

Introduction and Purpose:
Pressure Injury remains one of the most common complications in Spinal Cord Injury (SCI). Individuals with spinal cord injury are more prone to develop pressure injury due to motor, sensory, autonomic impairment, activity and mobility limitation, impairment in general and mental health status leading to recurrent hospitalisations, multiple surgeries, potentially devastating complications, increased costs for patient care, morbidity and early mortality. Moreover, it has psychological, physical & social burdens which impact the quality of life (QoL) of the individual. Therefore, we have designed this study to assess the prevalent risk factors involved in developing pressure injury and the effect of pressure injury on the quality of life of a spinal cord injury individual.

What will be your participation in the study?
Study subjects will be spinal cord injury individuals with pressure injury attending PMR OPD and admitted in PMR IPD, AIIMS Bhopal. They will be invited to participate in the study after obtaining permission from competent authorities. The risk factors will be assessed through standard scales and quality of life will be assessed through interviews using a semi-structured questionnaire.

Benefits from the study:
The study will help to identify the risk factors for developing pressure injury in individuals with spinal cord injury. The study is also an attempt to assess the quality of life of persons living with spinal cord injury and pressure injury.

Confidentiality:
Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. We will not use your name in any of the information we get from this study or in any of the research reports. Only pooled data after analysis will be used for research and published for academic publications.

Potential harm from the study:

The minimal risk that confidentiality may be lost.

WHO DO YOU CONTACT FOR MORE INFORMATION OR IF HAVE CONCERNS?
If you have any questions, concerns or complaints about the study at any stage, you can contact:
Name: Dr. Prasenjit Bhadra,
Junior Resident (Academics),
AIIMS, Bhopal,
Saket Nagar, Madhya Pradesh.
Telephone number: +919774344627
Email: vadra.tga@gmail.com

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 2

प्रतिभागी सूचना पत्र (पीआईएस)

प्रिय महोदय / महोदया,
आपसे "दबाव की चोटों वाले रीढ़ की हड्डी की चोट वाले व्यक्तियों में जोखिम कारकों और जीवन की गुणवत्ता का आकलन करने के लिए एक अवलोकन अध्ययन" नामक एक अध्ययन में भाग लेने का अनुरोध किया जाता है।

स्नातकोत्तर छात्र:
डॉ प्रसेनजीत भद्रा,
जूनियर रेजिडेंट (अकादमिक),
भौतिक चिकित्सा और पुनर्वास विभाग,
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल,
साकेत नगर, भोपाल।

मार्गदर्शक:
डॉ. वीरेंद्र के वर्मा,
सह - प्राध्यापक,
ऑर्थोपेडिक विभाग,
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल,
साकेत नगर, भोपाल।

हम वास्तव में वर्तमान अध्ययन के संबंध में आपके समय और ध्यान की सराहना करते हैं। हम आपको आमंत्रित कर रहे हैं इसमें भाग लेने के लिए जो आपकी भागीदारी के बारे में है। अध्ययन में आपकी भागीदारी नहीं है अनिवार्य। यदि आप भाग नहीं लेना चाहते हैं, तो आपको कोई कारण बताने की आवश्यकता नहीं है, और यह प्रभावित नहीं होगा आप जो काम करते हैं। यदि आप अभी भाग लेना चाहते हैं, लेकिन बाद में अपना विचार बदलते हैं, तो आप बाहर निकल सकते हैं अध्ययन के किसी भी समय। केवल अगर आप इस अध्ययन में भाग लेने के लिए सहमत हैं, तो आपसे हस्ताक्षर करने के लिए कहा जाएगा सहमति रूपों।

परिचय और उद्देश्य:

स्पाइनल कॉर्ड इंजरी (एससीआई) के रोगियों में दबाव की चोट सबसे आम जटिलताओं में से एक है। रीढ़ की हड्डी की चोट वाले व्यक्तियों में मोटर और संवेदी हानि, गतिविधि और गतिशीलता की सीमाओं, त्वचा की संरचना में सामान्य और मानसिक स्वास्थ्य की स्थिति में बदलाव के कारण दबाव की चोटों के विकास की संभावना अधिक होती है। दबाव की चोट का रोगी और स्वास्थ्य देखभाल प्रणाली पर एक महत्वपूर्ण प्रभाव पड़ता है जिसके कारण बार-बार अस्पताल में भर्ती होना, कई सर्जरी, संभावित विनाशकारी जटिलताएं, रोगी की देखभाल के लिए बढ़ी हुई लागत, रुग्णता और प्रारंभिक मृत्यु दर होती है। इसके अलावा, इसका मनोवैज्ञानिक, शारीरिक, सामाजिक बोझ है और इसका रोगियों के जीवन की गुणवत्ता (QoL) पर प्रभाव पड़ता है। रीढ़ की हड्डी की चोट के रोगियों में एक जटिलता के रूप में दबाव की चोट पर QoL को कोरलेट करने वाले बहुत कम अध्ययन हैं। इसलिए, हमने इस अध्ययन को रीढ़ की हड्डी की चोट के रोगियों में दबाव की चोटों के विकास के लिए प्रचलित जोखिम कारकों और रीढ़ की हड्डी की चोट के रोगियों में जीवन की गुणवत्ता पर उनके प्रभाव का आकलन करने के लिए डिज़ाइन किया है।

अध्ययन में आपकी क्या भागीदारी होगी?

पीएमआर ओपीडी में भाग लेने वाले और पीएमआर आईपीडी, एम्स भोपाल में भर्ती होने वाले दबाव की चोटों वाले रीढ़ की हड्डी की चोट वाले व्यक्ति अध्ययन के विषय होंगे। सक्षम अधिकारियों से अनुमति लेने के बाद उन्हें अध्ययन में भाग लेने के लिए आमंत्रित किया जाएगा। जोखिम कारकों का मूल्यांकन मानक पैमानों के माध्यम से किया जाएगा और जीवन की गुणवत्ता का मूल्यांकन अर्ध-संरचित प्रश्नावली का उपयोग करके साक्षात्कार के माध्यम से किया जाएगा

अध्ययन से लाभ:

अध्ययन रीढ़ की हड्डी की चोट वाले व्यक्तियों में दबाव की चोटों के विकास के जोखिम कारकों की पहचान करने में मदद करेगा। अध्ययन रीढ़ की हड्डी की चोट और दबाव की चोटों के साथ रहने वाले व्यक्तियों के जीवन की गुणवत्ता का आकलन करने का भी एक प्रयास है।

गोपनीयता:

कोई भी जानकारी जो इस अध्ययन के संबंध में प्राप्त की जाती है और जिसे आपके साथ पहचाना जा सकता है, गोपनीय रहेगी और केवल आपकी अनुमति से या कानून द्वारा आवश्यक होने पर ही इसका खुलासा किया जाएगा। हम इस अध्ययन से प्राप्त किसी भी जानकारी में या किसी भी शोध रिपोर्ट में आपके नाम का उपयोग नहीं करेंगे। विश्लेषण के बाद केवल एकत्रित डेटा का उपयोग अनुसंधान के लिए किया जाएगा और अकादमिक प्रकाशनों के लिए प्रकाशित किया जाएगा।

अध्ययन से संभावित नुकसान:

न्यूनतम जोखिम है कि गोपनीयता खो सकती है।

अधिक जानकारी के लिए आप किससे संपर्क करते हैं या यदि आपको कोई चिंता है?

यदि आप किसी भी स्तर पर अध्ययन के बारे में कोई प्रश्न, चिंता या शिकायत करना चाहते हैं, तो आप कर सकते हैं |

संपर्क करें:

नाम: डॉ प्रसेनजीत भद्र,

जूनियर रेजिडेंट (अकादमिक),

एम्स, भोपाल,

साकेत नगर, मध्य प्रदेश।

टेलीफोन नंबर: +919774344627

ईमेल: vadra.tga@gmail.com

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 3

CONSENT FORM

Study title: "An observational study to assess the risk factors and quality of life in spinal cord injury individuals with pressure injury"

This study will be conducted by: Dr. Prasenjit Bhadra

Declaration by participant

Yes, by signing below I _____ age_____, residence _____ ready to participate in this study. The nature and purpose of the study, the expected duration of the study, and other relevant details of the study have been explained to me in detail. I agree that information has been given to me about this study. I know that my participation in this study depends on my wish and I can cancel my participation in this study without giving any reason. As the result of this study will not be disclosed anywhere and will be used for scientific study purposes only, I am ready to participate in this study.

Date: Name

Place
Signature

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 4

सहमति पत्र

अध्ययन का शीर्षक: "दबाव की चोटों वाले रीढ़ की हड्डी की चोट वाले व्यक्तियों में जोखिम कारकों और जीवन की गुणवत्ता का आकलन करने के लिए एक अवलोकन अध्ययन"

यह अध्ययन संचालित किया जाएगा: डॉ प्रसेनजीत भद्र

प्रतिभागी द्वारा घोषणा

हां, नीचे हस्ताक्षर करके मैं _____ आयु_____, निवास _____ इस अध्ययन में भाग लेने के लिए तैयार हूं। अध्ययन की प्रकृति और उद्देश्य, अध्ययन की अपेक्षित अवधि और अध्ययन के अन्य प्रासंगिक विवरण मुझे विस्तार से समझाया गया है। मैं सहमत हूं कि मुझे इस अध्ययन के बारे में जानकारी दी गई है। मुझे पता है कि इस अध्ययन में मेरी भागीदारी मेरी इच्छा पर निर्भर करती है और मैं बिना कोई कारण बताए इस अध्ययन में अपनी भागीदारी को रद्द कर सकता हूं। चूंकि इस अध्ययन के परिणाम का कहीं भी खुलासा नहीं किया जाएगा और इसका उपयोग केवल वैज्ञानिक अध्ययन के उद्देश्य से किया जाएगा। इसलिए, मैं इस अध्ययन में भाग लेने के लिए तैयार हूं।

तारीख: नाम:

जगह:

हस्ताक्षर:

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 5

UNDERTAKING

I hereby state that the Questionnaires/ Scales used in the study are not copyright as per myknowledge.

Thanking You

Dr. Prasenjit Bhadra
Department of Physical
Medicine &
Rehabilitation
AIIMS, Bhopal

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 6

PROFORMA

CRF No: Reg.No:

Name: Age: Sex:

Address:

Phone no:

Education: Occupation:

Income: Socio-economic status:

Sensory level of injury: Motor level of injury:

Neurological level of injury: Skeletal level of injury:

ASIA Impairment scale(AIS):

National Pressure Injury Advisory Panel(NPIAP):

Braden Scale:

1) Sensory Perception	
2) Activity	
3) Moisture	
4) Mobility	
5) Nutrition	
6) Friction, Shear	
Total Score	

SCIPUS Scale:

1. Level of activity	
2. Mobility	
3. Complete SCI	
4. Urine incontinence/Constantly moist	
5. Autonomic Dysreflexia/Severe spasticity	
6. Age (years)	
7. Tobacco use/Smoking	
8. Pulmonary disease	
9. Cardiac disease/Abn.EKG	
10. Diabetes/Glucose≥110	
11. Renal disease	
12. Impaired cognitive function	
13. In a nursing home/Hospital	
14. Albumin<3.4/Total Protein<6.4	
15. Hemoglobin<12.0/Hematocrits<36.0	
Total Score	

WHOQOL-BREF:

1. Physical Health Domain	
2. Psychological Domain	
3. Social Relationship Domain	
4. Environment Domain	
Total Score	

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 7

INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISNCSCI)

Patient Name_____ Date/Time of Exam _____

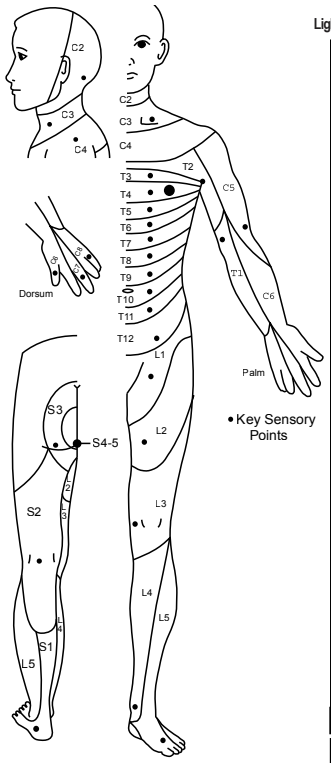
Examiner Name _____ Signature _____

RIGHT	MOTOR KEY MUSCLES	Light Touch (LTR)	Pin Prick (PPR)	SENSORY KEY SENSORY POINTS Light Touch (LTL)	Pin Prick (PPL)	MOTOR KEY MUSCLES	LEFT
							C2
							C3
							C4
Elbow flexors	C5						C5 Elbow flexors
Wrist extensors	C6						C6 Wrist extensors
Elbow extensors	C7						C7 Elbow extensors
Finger flexors	C8						C8 Finger flexors
Finger abductors (little finger)	T1						T1 Finger abductors (little finger)
							T2
							T3
							T4
							T5
							T6
							T7
							T8
							T9
							T10
							T11
							T12
							L1
Hip flexors	L2						L2 Hip flexors
Knee extensors	L3						L3 Knee extensors
Ankle dorsiflexors	L4						L4 Ankle dorsiflexors
Long toe extensors	L5						L5 Long toe extensors
Ankle plantar flexors	S1						S1 Ankle plantar flexors
							S2
							S3
(VAC) Voluntary Anal Contraction (Yes/No)							S4-5 (DAP) Deep Anal Pressure (Yes/No)
RIGHT TOTALS (MAXIMUM)		(50)	(56)	(56)	(56)		LEFT TOTALS (MAXIMUM) (50)

UER (Upper Extremity Right) — UEL (Upper Extremity Left)

LER (Lower Extremity Right) — LEL (Lower Extremity Left)

Comments (Non-key Muscle? Reason for NT? Pain? Non-SCI condition?):



MOTOR (SCORING ON REVERSE SIDE)

0 = Total paralysis
1 = Palpable or visible contraction
2 = Active movement, gravity eliminated
3 = Active movement, against gravity
4 = Active movement, against some resistance
5 = Active movement, against full resistance
NT = Not testable
0*, 1*, 2*, 3*, 4*, NT* = Non-SCI condition present

SENSORY (SCORING ON REVERSE SIDE)

0 = Absent
1 = Altered
2 = Normal
NT = Not testable
0*, 1*, NT* = Non-SCI condition present

MOTOR SUBSCORES

UER ____ +UEL ____ = *UEMS TOTAL* ____ (MAX (25) (25) (50))

LER ____ + LEL ____ = *LEMS TOTAL* ____ (MAX (25) (25) (50))

SENSORY SUBSCORES

LTR ____ + LTL ____ = *LT TOTAL* ____ (MAX (56) (56) (112))

PPR ____ + PPL ____ = *PP TOTAL* ____ (MAX (56) (56) (112))

NEUROLOGICAL LEVELS (Steps 1- 6 for classification as on reverse)	R	L			
1. SENSORY			3. NEUROLOGICAL LEVEL OF INJURY (NLI)		4. COMPLETE OR INCOMPLETE? Incomplete = Any sensory or motor function in S4-5
2. MOTOR					5. ASIA IMPAIRMENT SCALE (AIS)

(In injuries with absent motor OR sensory function in S4-5 only)

6. ZONE OF PARTIAL PRESERVATION (Most caudal levels with any innervation)

	R	L
SENSORY		
MOTOR		

Page 1/2

This form may be copied freely but should not be altered without permission from the American Spinal Injury Association.

REV 04/19

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 7

Muscle Function Grading

0 = Total paralysis

1 = Palpable or visible contraction

2 = Active movement, full range of motion (ROM) with gravity eliminated

3 = Active movement, full ROM against gravity

4 = Active movement, full ROM against gravity and moderate resistance in a muscle specific position

5 = (Normal) active movement, full ROM against gravity and full resistance in a functional muscle position expected from an otherwise unimpaired person

NT = Not testable (i.e. due to immobilization, severe pain such that the patient cannot be graded, amputation of limb, or contracture of > 50% of the normal ROM)

0*, 1*, 2*, 3*, 4*, NT* = Non-SCI condition present [a]

Sensory Grading

0 = Absent **1** = Altered, either decreased/impaired sensation or hypersensitivity

2 = Normal **NT** = Not testable

0*, 1*, NT* = Non-SCI condition present [a]

[a] Note: Abnormal motor and sensory scores should be tagged with a '*' to indicate an impairment due to a non-SCI condition. The non-SCI condition should be explained in the comments box together with information about how the score is rated for classification purposes (at least normal / not normal for classification).

When to Test Non-Key Muscles:

In a patient with an apparent AIS B classification, non-key muscle functions more than 3 levels below the motor level on each side should be tested to most accurately classify the injury (differentiate between AIS B and C).

Movement	Root level
Shoulder: Flexion, extension, adbuction, adduction, internal and external rotation **Elbow:** Supination	C5
Elbow: Pronation **Wrist:** Flexion	C6
Finger: Flexion at proximal joint, extension **Thumb:** Flexion, extension and abduction in plane of thumb	C7
Finger: Flexion at MCP joint **Thumb:** Opposition, adduction and abduction perpendicular to palm	C8
Finger: Abduction of the index finger	T1
Hip: Adduction	L2
Hip: External rotation	L3
Hip: Extension, abduction, internal rotation **Knee:** Flexion **Ankle:** Inversion and eversion **Toe:** MP and IP extension	L4
Hallux and Toe: DIP and PIP flexion and abduction	L5
Hallux: Adduction	S1

ASIA Impairment Scale (AIS)

A = Complete. No sensory or motor function is preserved in the sacral segments S4-5.

B = Sensory Incomplete. Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-5 (light touch or pin prick at S4-5 or deep anal pressure) AND no motor function is preserved more than three levels below the motor level on either side of the body.

C = Motor Incomplete. Motor function is preserved at the most caudal sacral segments for voluntary anal contraction (VAC) OR the patient meets the criteria for sensory incomplete status (sensory function preserved at the most caudal sacral segments S4-5 by LT, PP or DAP), and has some sparing of motor function more than three levels below the ipsilateral motor level on either side of the body. (This includes key or non-key muscle functions to determine motor incomplete status.) For AIS C – less than half of key muscle functions below the single NLI have a muscle grade ≥ 3.

D = Motor Incomplete. Motor incomplete status as defined above, with at least half (half or more) of key muscle functions below the single NLI having a muscle grade ≥ 3.

E = Normal. If sensation and motor function as tested with the ISNCSCI are graded as normal in all segments, and the patient had prior deficits, then the AIS grade is E. Someone without an initial SCI does not receive an AIS grade.

Using ND: To document the sensory, motor and NLI levels, the ASIA Impairment Scale grade, and/or the zone of partial preservation (ZPP) when they are unable to be determined based on the examination results.

ASIA
AMERICAN SPINAL INJURY ASSOCIATION

INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY

ISCOS
INTERNATIONAL SPINAL CORD SOCIETY

Page 2/2

Steps in Classification

The following order is recommended for determining the classification of individuals with SCI.

1. Determine sensory levels for right and left sides.
The sensory level is the most caudal, intact dermatome for both pin prick and light touch sensation.

2. Determine motor levels for right and left sides.
Defined by the lowest key muscle function that has a grade of at least 3 (on supine testing), providing the key muscle functions represented by segments above that level are judged to be intact (graded as a 5).
Note: in regions where there is no myotome to test, the motor level is presumed to be the same as the sensory level, if testable motor function above that level is also normal.

3. Determine the neurological level of injury (NLI).
This refers to the most caudal segment of the cord with intact sensation and antigravity (3 or more) muscle function strength, provided that there is normal (intact) sensory and motor function rostrally respectively.
The NLI is the most cephalad of the sensory and motor levels determined in steps 1 and 2.

4. Determine whether the injury is Complete or Incomplete.
(i.e. absence or presence of sacral sparing)
*If voluntary anal contraction = **No** AND all S4-5 sensory scores = **0***
*AND deep anal pressure = **No**, then injury is **Complete.***
*Otherwise, injury is **Incomplete**.*

5. Determine ASIA Impairment Scale (AIS) Grade.
Is injury Complete? If YES, AIS=A

NO ↓

Is injury Motor Complete? If YES, AIS=B

NO ↓ (No=voluntary anal contraction OR motor function more than three levels below the motor level on a given side, if the patient has sensory incomplete classification)

Are at least half (half or more) of the key muscles below the neurological level of injury graded 3 or better?

NO ↓ **AIS=C** **YES** ↓ **AIS=D**

If sensation and motor function is normal in all segments, AIS=E
Note: AIS E is used in follow-up testing when an individual with a documented SCI has recovered normal function. If at initial testing no deficits are found, the individual is neurologically intact and the ASIA Impairment Scale does not apply.

6. Determine the zone of partial preservation (ZPP).
The ZPP is used only in injuries with absent motor (no VAC) OR sensory function (no DAP, no LT and no PP sensation) in the lowest sacral segments S4-5, and refers to those dermatomes and myotomes caudal to the sensory and motor levels that remain partially innervated. With sacral sparing of sensory function, the sensory ZPP is not applicable and therefore "NA" is recorded in the block of the worksheet. Accordingly, if VAC is present, the motor ZPP is not applicable and is noted as "NA".

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 8

BRADEN SCALE – For Predicting Pressure Sore Risk

SEVERE RISK: Total score ≤ 9 **HIGH RISK**: Total score 10-12
MODERATE RISK: Total score 13-14 **MILD RISK**: Total score 15-18

RISK FACTOR	SCORE/DESCRIPTION				DATE OF ASSESS ➡ 1	2	3	4
SENSORY PERCEPTION Ability to respond meaningfully to pressure-related discomfort	**1. COMPLETELY LIMITED** – Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation, **OR** limited ability to feel pain over most of body surface.	**2. VERY LIMITED** – Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness, **OR** has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.	**3. SLIGHTLY LIMITED** – Responds to verbal commands but cannot always communicate discomfort or need to be turned, **OR** has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	4. **NO IMPAIRMENT** – Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.				
MOISTURE Degree to which skin is exposed to moisture	1. **CONSTANTLY MOIST**– Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	2. **OFTEN MOIST** – Skin is often but not always moist. Linen must be changed at least once a shift.	3. **OCCASIONALLY MOIST** – Skin is occasionally moist, requiring an extra linen change approximately once a day.	4. **RARELY MOIST** – Skin is usually dry; linen only requires changing at routine intervals.				
ACTIVITY Degree of physical activity	1. **BEDFAST** – Confined to bed.	2. **CHAIRFAST** – Ability to walk severely limited or nonexistent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	3. **WALKS OCCASIONALLY** – Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	4. **WALKS FREQUENTLY**– Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours.				
MOBILITY Ability to change and control body position	1. **COMPLETELY IMMOBILE** – Does not make even slight changes in body or extremity position without assistance.	2. **VERY LIMITED** – Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	3. **SLIGHTLY LIMITED** – Makes frequent though slight changes in body or extremity position independently.	4. **NO LIMITATIONS** – Makes major and frequent changes in position without assistance.				
NUTRITION Usual food intake pattern [1]NPO: Nothing by mouth. [2]IV: Intravenously. [3]TPN: Total parenteral nutrition.	**1. VERY POOR** – Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement, **OR** is NPO[1] and/or maintained on clear liquids or IV[2] for more than 5 days.	**2. PROBABLY INADEQUATE** – Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement **OR** receives less than optimum amount of liquid diet or tube feeding.	**3. ADEQUATE** – Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally refuses a meal, but will usually take a supplement if offered, **OR** is on a tube feeding or TPN[3] regimen, which probably meets most of nutritional needs.	4. **EXCELLENT** – Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.				
FRICTION AND SHEAR	1. **PROBLEM**- Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures, or agitation leads to almost constant friction.	2. **POTENTIAL PROBLEM**– Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	3. **NO APPARENT PROBLEM** – Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.					
TOTAL SCORE	**Total score of 12 or less represents HIGH RISK**							

ASSESS	DATE	EVALUATOR SIGNATURE/TITLE	ASSESS.	DATE	EVALUATOR SIGNATURE/TITLE
1	/ /		3	/ /	
2	/ /		4	/ /	

NAME-Last First Middle	Attending Physician	Record No.	Room/Bed

Form 3166P BRIGGS, Des Moines, IA 50306 (800) 247-2343 www.BriggsCorp.com
R304 PRINTED IN U.S.A

Source: Barbara Braden and Nancy Bergstrom. Copyright, 1988. Reprinted with permission. Permission should be sought to use this tool at www.bradenscale.com

BRADEN SCALE

Use the form only for the approved purpose. Any use of the form in publications (other than internal policy manuals and training material) or for profit-making ventures requires additional permission and/or negotiation.

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 9

SCIPUS Scale

PRESSURE ULCER RISK ASSESSMENT SCALE
FOR THE SPINAL CORD INJURED

Version 1.16
Revised 10/25/94

NAME

DATE

RISK FACTOR	CODED VALUE	SCORE
1. LEVEL OF ACTIVITY	0[]ambulatory 1[]wheelchair 4[]bed	
2. MOBILITY	0[]full 1[]limited 3[]immobile	
3. COMPLETE SCI	0[]no 1[]yes	
4. URINE INCONTINENCE OR CONSTANTLY MOIST	0[]no 1[]yes	
5. AUTONOMIC DYSREFLEXIA OR SEVERE SPASTICITY	0[]no 1[]yes	
6. AGE (years)	0[]≤34 1[]35-64 2[]≥65	
7. TOBACCO USE/SMOKING	0[]never 1[]former 3[]current	
8. PULMONARY DISEASE	0[]no 2[]yes	
9. CARDIAC DISEASE OR ABN. EKG	0[]no 1[]yes	
10. DIABETES OR GLUCOSE ≥110 mg/dl	0[]no 1[]yes	
11. RENAL DISEASE	0[]no 1[]yes	
12. IMPAIRED COGNITIVE FUNCTION	0[]no 1[]yes	
13. IN A NURSING HOME OR HOSPITAL	0[]no 2[]yes	
14. ALBUMIN <3.4 OR T.PROTEIN <6.4	0[]no 1[]yes	
15. HEMATOCRIT <36.0% (HGB <12.0)	0[]no 1[]yes	
TOTAL SCORE (0-25)		

RISK: LOW 0-2, MODERATE 3-5, HIGH 6-8, VERY HIGH 9-25

NURSE ASSESSOR'S SIGNATURE: _____

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 10

WHOQOL-BREF

The World Health Organization Quality of Life (WHOQOL) – BREF
© World Health Organization 2004

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

Name **Date Administered**

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about how much you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	Extremely
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4.	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5
7.	How well are you able to	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5

14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied or dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with you sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5
20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5

23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last four weeks.

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Do you have any comments about the assessment?

SCORING:

		Equations for computing domain scores	Raw Score	Transformed Score (0-100)
Domain 1	Physical Health	(6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18 □ + □ + □ + □ + □ + □ + □		
Domain 2	Psychological	Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26) □ + □ + □ + □ + □ + □		
Domain 3	Social Relationships	Q20 + Q21 + Q22 □ + □ + □		

Domain 4	Environment	Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25 □ +□ + □ + □ + □ + □ + □ + □		
		Total Score		

अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल

All India Institute of Medical Sciences Bhopal

ANNEXURE 11

हूकॉल ब्रीफ (WHOQOL-BREF)*

विश्व स्वास्थ्य संगठन, दिसम्बर 1996
मनोविकार विभाग,
अखिल भारतीय आयुर्विज्ञान संस्थान
नई दिल्ली - 110 029.

आपके बारे में

हम चाहेंगे कि शुरुआत करने से पहले, आप अपने बारे में कुछ सामान्य प्रश्नों के उत्तर दें। सही उत्तर के चारों ओर गोला या खाली स्थान पर सही उत्तर लिखें –

आप क्या है? पुरुष स्त्री

आपकी जन्म तारीख क्या है? दिन/महीना/वर्ष ____ / ____ / ____

आपकी शिक्षा कहाँ तक हुई है?
बिल्कुल नहीं
प्राथमिक स्कूल तक
माध्यमिक स्कूल तक
हाई स्कूल तक
हाई स्कूल से आगे

आपका वैवाहिक स्तर क्या है?
अविवाहित
विवाहित
विवाहित की तरह साथ में रहते हुए
विवाहित लेकिन अलग हुए
तलाकशुदा
विधुर/विधवा

क्या आजकल आप बीमार है हाँ नही

अगर आपके स्वास्थ्य में कुछ गढबड़ है तो आपके विचार में यह क्या है? _____

अनुदेश

यह प्रश्नावली पूछती है कि अपने जीवन की गुणवत्ता (क्वालिटी), स्वास्थ्य और जीवन के अन्य क्षेत्रों के बारे में आप कैसा अनुभव करते हैं। कृपया सभी प्रश्नों के उत्तर दें। यदि किसी प्रश्न के बारे में अनिश्चित हों कि कौन सा उत्तर दिया जाए, तो कृपया उसे चुनें जो सबसे उचित लगता हो है। यह अक्सर आपके मन में आने वाला पहला उत्तर हो सकता है।

कृपया अपने मापदण्डों, आशओं, सुखों एवं चिंताओं को ध्यान में रखे। आपसे आग्रह है कि इन प्रश्नों के उत्तर अपने जीवन के पिछले दो सप्ताहों के आधार पर ही दें। उदाहरण के तौर पर पिछले दो सप्ताहों के आधार पर एक प्रश्न यह हो सकता है:

	बिल्कुल नहीं	थोड़ा	मध्यम	बहुत अधिक	पूरी तरह से
क्या आपको दूसरों से उस तरह को सहारा मिलता है, जिसकी आपको आवश्यकता है?	1	2	3	4	5

पिछले दो सप्ताहों में आपको दूसरों से कितना सहारा मिलता है उसके अनुसार ऊपर दिए गए पाँचों उत्तरों में से सबसे उचित उत्तर को चुनकर उसके साथ वाली संख्या पर गोला बनाकर दर्शाएं। जैसे अगर आपको दूसरों से बहुत अधिक सहारा मिला है तो आप संख्या 4 के चारों ओर गोला बनायेंगे, जैसा कि अगले पृष्ट पर दर्शाया गया है–

इस प्रश्नावली को उपयोग करने से पहले अनुमति के लिये सम्पर्क करें–

डा० शेखर सक्सेना,
अतिरिक्त आचार्य
मनोविकार विभाग
अखिल भारतीय आयुर्विज्ञान संस्थान, नई दिल्ली - 110 029.

	बिल्कुल नही	थोड़ा	मध्यम	बहुत अधिक	पूरी तरह से
क्या आपको दुसरों से उस तरह का सहारा मिलता है, जिसकी आपको आवश्यकता हैं?	1	2	3	④	5

अगर आपको पिछले दो सप्ताहों में दूसरों से उस तरह का सहारा जिसकी आपको आवश्यकता पड़ी, बिल्कुल नहीं मिला तो संख्या "।" के चारों ओर गोला लगायें। कृपया प्रत्येक प्रश्न को पढे, अपनी भावनाओं का मूल्याकन करें और प्रत्येक प्रश्न के लिए उस संख्या के चारों ओर गोला बनाएं जो आपके लिए उप्युक्त हो।

	बहुत खराब	काफी खराब	न अच्छा न खराब	काफी अच्छा	बहुत अच्छा
1. अपने जीवन की गुणवत्ता (क्वालिटी) का आप कितना मूल्यांकन करते है?	1	2	3	4	5
	बहुत असंतुष्ट	काफी असंतुष्ट	न संतुष्ट न असंतुष्ट	काफी संतुष्ट	बहुत संतुष्ट
2. अपने स्वास्थ्य से आप कितने संतुष्ट हैं?	1	2	3	4	5

निम्नलिखित प्रश्न पूछते हैं कि पिछले दो सप्ताहों में आपने कुछ चीजों को कितना अनुभव किया है?

	बिल्कुल नहीं	थोड़ा	मध्यम	बहुत अधिक	अत्याधिक
3. आपके विचार में दर्द किस हद तक आपको वह करने से रोकता है, जो आपको करना होता है?	1	2	3	4	5
4. रोजमर्रा की जिन्दगी चलाने में आपको किसी भी इलाज की कितनी आवश्यकता पड़ती है?	1	2	3	4	5
5. आप जीवन में कितना आनन्द लेते हैं?	1	2	3	4	5
6. अपने जीवन को किस हद तक आप सार्थक अनुभव करते हैं?	1	2	3	4	5
7. आप कितनी अच्छी तरह से मन को एकाग्र कर सकते हैं?	1	2	3	4	5

	बिल्कुल नही	थोड़ा	मध्यम	बहुत अधिक	अत्याधिक
8. अपने दैनिक जीवन में अपने आप को आप कितना सुरक्षित अनुभव करते हैं?	1	2	3	4	5
9. आपका भौतिक वातावरण कितना स्वास्थ्यवर्धक है?	1	2	3	4	5

निम्नलिखित प्रश्न आपसे इस बारे में पूछते है कि पिछले दो सप्ताहों में कुछ चीजें या कार्य आपने कितनी पूर्णता से अनुभव किए हैं या कर पाए है

	बिल्कुल नही	थोड़ा	मध्यम	बहुत अधिक	पूरी तरह से
10. क्या आपमें दिन प्रतिदिन के जीवन कर्यो के लिए पर्याप्त स्फूर्ति (चुस्ती) है?	1	2	3	4	5
11. क्या अपनी शारीरिक बनावट (रूप) को आप स्वीकार कर पाते है?	1	2	3	4	5
12. क्या आपके पास अपनी आवश्यकताएं पूरी करने के लिए पर्याप्त धन है?	1	2	3	4	5
13. आपको दिन प्रतिदिन के जीवन में जिन जानकारियों की आवश्यकता है, वे आपको किस हद तक उपलब्ध हैं?	1	2	3	4	5
14. अवकाश की कियाओं के अवसर आपको किस हद तक मिलते है?	1	2	3	4	5
15. आप कितनी अच्छी तरह इधर–उधर आ जा पाते हैं?	1	2	3	4	5

निम्नलिखित प्रश्न आपसे इस बारे में पूछते हैं कि पिछले दो सप्ताहों में अपने जीवन के विभिन्न पहलुओं के बारे मे आप कितने अच्छे या संतुष्ट रहे हैं?

	बहुत असंतुष्ट	काफी असंतुष्ट	न संतुष्ट न असंतुष्ट	काफी संतुष्ट	बहुत संतुष्ट
16. अपनी नींद से आप कितने संतुष्ट हैं?	1	2	3	4	5

	बहुत असंतुष्ट	काफी असंतुष्ट	न संतुष्ट न असंतुष्ट	काफी संतुष्ट	बहुत संतुष्ट
17. दैनिक जीवन कार्यों को करने की अपनी क्षमता से आप कितने संतुष्ट हैं?	1	2	3	4	5
18. अपनी कार्यक्षमता से आप कितने संतुष्ट हैं?	1	2	3	4	5
19. अपने से आप कितने संतुष्ट हैं?	1	2	3	4	5
20. अपने व्यक्तिगत संबंधों से आप कितने संतुष्ट हैं?	1	2	3	4	5
21. अपने यौन (सैक्स) जीवन से आप कितने संतुष्ट हैं?	1	2	3	4	5
22. अपने मित्रों से आपको जो सहारा मिलता है, उससे आप कितने संतुष्ट हैं?	1	2	3	4	5
23. अपने रहने की जगह की परिस्थितियों से आप कितने संतुष्ट है?	1	2	3	4	5
24. स्वास्थ्य सेवाओं तक आपकी पहुंच से आप किनने संतुष्ट हैं?	1	2	3	4	5
25. अपने यातायात के साधन से आप कितने संतुष्ट हैं?	1	2	3	4	5

निम्नलिखित प्रश्न इस बारे में है कि पिछले दो सप्ताहों में आपने कुछ चीजों को कितनी बार महसूस किया है

	कभी नहीं	कभी–कभी	अक्सर	बहुत अधिक बार	हमेशा
26. कितनी बार आप नकरात्मक भावनाएँ (जैसे दुःखी मन, निराशा, घबराहट, उदासी) महसूस करते हैं?	1	2	3	4	5

क्या इस प्रश्नावनी को भरनें मे किसी ने आपकी मदद की? .....

इस प्रश्नावनी को भरने में कितना समय लगा? .....

इस प्रश्नावली के बारे मे आपकी कोई टिप्पणी .....

आपके सहयोग के लिए धन्यवाद !

MASTERCHART

SL NO	DURATION OF HOSPITAL STAY (IN DAYS)	AGE (years)	SEX	ADDRESS	EDUCATION LEVEL	OCCUPATION	INCOME(IN LAKHS PER ANUM PER CAPITA)	NEUROLOGICAL LEVEL OF INJURY (NLI)	MODE OF INJURY	TRAUMATIC/NON-TRAUMATIC	PHYSIOLOGICAL TYPE OF SCI
1	18	38	M	VIDISHA,MP	12TH	FACTORY WORKER	0.4L	C8	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
2	9	39	M	BETUL,MP	10TH	FARMER	0.4L	D8	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
3	11	28	F	NARSIMHAPUR, MP	10TH	HOME MAKER	0.4L	D11	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
4	12	22	M	VIDISHA,MP	12TH	SHOPKEEPER	0.5L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
5	10	20	M	SATNA,MP	GRADUATE	STUDENT	0.4L	C4	TRANSVERSE MYELITIS	NON-TRAUMATIC	TETRAPLEGIA
6	9	50	F	REWA,MP	5TH	SHOPKEEPER	0.2L	D11	POTT'S	NON-TRAUMATIC	PARAPLEGIA
7	12	37	M	SAGAR,MP	8TH	CONFECTIONAER	0.2L	C8	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
8	13	47	F	ASHOKNAGAR,MP	5TH	HOMEMAKER	0.6L	C5	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
9	19	23	M	RAISEN,MP	9TH	UNEMPLOYED	0.2L	D8	POTT'S	NON-TRAUMATIC	PARAPLEGIA
10	9	28	M	VIDISHA,MP	GRADUATE	COMPUTER OPERATOR	0.6L	C6	TRANSVERSE MYELITIS	NON-TRAUMATIC	TETRAPLEGIA
11	10	27	M	BETUL,MP	4TH	FRUIT SELLER	0.3L	C6	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
12	7	31	M	SATNA,MP	12TH	UNEMPLOYED	0.2L	D7	POTT'S	NON-TRAUMATIC	PARAPLEGIA
13	11	47	F	NARSIMHAPUR, MP	9TH	HOMEMAKER	0.3L	C5	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
14	13	65	F	BHOPAL,MP	12TH	HOMEMAKER	0.6L	C5	POTT'S	NON-TRAUMATIC	TETRAPLEGIA
15	8	52	M	BHOPAL,MP	GRADUATE	TEACHER	0.5L	C5	FALL FROM STAIRS	TRAUMATIC	TETRAPLEGIA
16	9	57	F	BHOPAL,MP	10TH	HOMEMAKER	0.3L	D6	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
17	11	55	M	REWA,MP	9TH	DAILY LABOUER	0.8L	D6	POTT'S	NON-TRAUMATIC	PARAPLEGIA
18	17	30	M	BHOPAL,MP	5TH	DAILY LABOUER	0.3L	C7	ASSAULT	TRAUMATIC	TETRAPLEGIA
19	10	30	M	SAGAR,MP	7TH	DAILY LABOUER	0.3L	C6	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	TETRAPLEGIA
20	9	53	F	BETUL,MP	5TH	HOMEMAKER	0.4L	D9	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	PARAPLEGIA
21	13	23	F	REWA,MP	POST GRADUATE	STUDENT	0.5L	D8	HYDATID CYST (SOL)	NON-TRAUMATIC	PARAPLEGIA
22	14	36	M	BHOPAL,MP	10TH	FARMER	0.2L	D12	EPENDYMOMA (SOL)	NON-TRAUMATIC	PARAPLEGIA
23	7	52	M	ASHOKNAGAR,MP	10TH	PRIEST	0.4L	C5	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
24	12	30	M	VIDISHA,MP	9TH	DAILY LABOUER	0.4L	D5	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
25	11	24	M	BHOPAL,MP	POST GRADUATE	STUDENT	0.4L	C4	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
26	9	22	F	BHOPAL,MP	GRADUATE	STUDENT	0.6L	C6	FALL FROM HEIGHT	TRAUMATIC	TETRAPLEGIA
27	16	21	M	BHOPAL,MP	GRADUATE	STUDENT	0.14L	D7	TRANSVERSE MYELITIS	NON-TRAUMATIC	PARAPLEGIA
28	19	28	M	RAISEN,MP	GRADUATE	UNEMPLOYED	0.3L	C4	ASSAULT	TRAUMATIC	TETRAPLEGIA
29	10	55	M	BHOPAL,MP	10TH	TAILOR	0.5L	D6	POTT'S	NON-TRAUMATIC	PARAPLEGIA
30	19	45	M	REWA,MP	10TH	FARMER	0.2L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
31	10	65	M	BHOPAL,MP	9TH	RETIRED RAILWAY EMPLOYEE	0.9L	L1	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	PARAPLEGIA
32	9	20	M	CHHATARPUR	GRADUATE	STUDENT	0.2L	D10	POTT'S	NON-TRAUMATIC	PARAPLEGIA
33	8	52	M	ASHOKNAGAR,MP	10TH	PRIEST	0.3L	C5	ASSAULT	TRAUMATIC	TETRAPLEGIA
34	12	42	F	BHOPAL,MP	9TH	ANGANWADI WORKER	0.4L	D12	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
35	11	70	F	VIDISHA,MP	NO SCHOOLING	HOMEMAKER	0.4L	D12	FALL FROM STAIRS	TRAUMATIC	PARAPLEGIA
36	7	39	M	SAGAR,MP	POST GRADUATE	BUSINESSMAN	0.6L	D6	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
37	11	31	M	BHOPAL,MP	8TH	DAILY LABOUER	0.3L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
38	19	57	M	BHOPAL,MP	5TH	FARMER	0.3L	C5	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	TETRAPLEGIA
39	18	19	M	CHHATARPUR	12TH	STUDENT	0.3L	D6	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
40	14	50	M	BETUL,MP	4TH	CARPENTER	0.3L	C4	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	TETRAPLEGIA
41	9	34	M	VIDISHA,MP	NO SCHOOLING	DAILY LABOUER	0.4L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
42	9	30	M	VIDISHA,MP	4TH	DAILY LABOUER	0.8L	C5	EPENDYMOMA (SOL)	NON-TRAUMATIC	TETRAPLEGIA
43	11	24	M	SAGAR,MP	10TH	SHOPKEEPER	0.6L	L1	SPORTS INJURY	TRAUMATIC	PARAPLEGIA
44	10	31	M	BHOPAL,MP	GRADUATE	BUSINESSMAN	0.7L	L1	POTT'S	NON-TRAUMATIC	PARAPLEGIA
45	15	42	F	NARSIMHAPUR, MP	NO SCHOOLING	HOME MAKER	0.3L	C6	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
46	9	47	M	KATNI,MP	9TH	DAILY LABOUER	0.5L	L1	SOL	NON-TRAUMATIC	PARAPLEGIA
47	9	38	M	RAISEN,MP	8TH	PRIVATE FACTORY WORKER	0.5L	C5	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
48	15	23	M	DAMOH, MP	9TH	UNEMPLOYED	0.3L	D12	TRANSVERSE MYELITIS	NON-TRAUMATIC	PARAPLEGIA
49	11	53	M	NEEMUCH, MP	11TH	DAILY LABOUER	0.5L	C5	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
50	18	40	M	BHOPAL,MP	8TH	DAILY LABOUER	0.6L	12	TRANSVERSE MYELITIS	NON-TRAUMATIC	PARAPLEGIA
51	16	52	M	BHOPAL,MP	8TH	FARMER	0.5L	C4	FALL FROM HEIGHT	TRAUMATIC	TETRAPLEGIA
52	8	74	M	BHOPAL,MP	6TH	FARMER	0.5L	C4	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
53	7	77	M	RAISEN,MP	NO SCHOOLING	FARMER	0.2L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
54	8	52	M	ASHOKNAGAR,MP	10TH	PRIEST	0.4L	C5	ASSAULT	TRAUMATIC	TETRAPLEGIA

SL NO	DURATION OF HOSPITAL STAY (IN DAYS)	AGE (years)	SEX	ADDRESS	EDUCATION LEVEL	OCCUPATION	INCOME(IN LAKHS PER ANUM PER CAPITA)	NEUROLOGICAL LEVEL OF INJURY (NLI)	MODE OF INJURY	TRAUMATIC/ NON-TRAUMATIC	PHYSIO-LOGICAL TYPE OF SCI
55	7	43	F	LALITPUR, UP	NO SCHOOLING	HOME MAKER	0.2L	L2	POTT'S	NON-TRAUMATIC	PARAPLEGIA
56	9	53	M	SHAHDOL,MP	NO SCHOOLING	FARMER	0.5L	D12	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
57	16	40	M	BETUL,MP	NO SCHOOLING	FARMER	0.4L	C4	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
58	20	28	M	BETUL,MP	GRADUATE	UNEMPLOYED	0.6L	D12	SPORTS INJURY	TRAUMATIC	PARAPLEGIA
59	16	64	M	NARSIMHAPUR, MP	2ND	FARMER	0.4L	L2	POTT'S	NON-TRAUMATIC	PARAPLEGIA
60	11	19	M	ASHOKNAGAR,MP	12TH	STUDENT	0.6L	D11	SPORTS INJURY	TRAUMATIC	PARAPLEGIA
61	9	60	F	PANNA, MP	NO SCHOOLING	HOME MAKER	0.4L	L1	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	PARAPLEGIA
62	8	31	M	BHOPAL,MP	7TH	SHOPKEEPER	0.4L	D8	ASSAULT	TRAUMATIC	PARAPLEGIA
63	10	60	M	BHOPAL,MP	6TH	DAILY LABOUER	0.5L	C4	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
64	11	38	M	LALITPUR, UP	7TH	FARMER	0.4L	L3	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
65	12	71	F	BETUL,MP	NO SCHOOLING	HOME MAKER	0.3L	D12	OSTEOPOROTIC COMPRESSION FRACTURE	NON-TRAUMATIC	PARAPLEGIA
66	13	44	M	LALITPUR, UP	7TH	DAILY LABOUER	0.4L	L3	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
67	11	27	F	NARSIMHAPUR, MP	8TH	SHOPKEEPER	0.5L	D4	ASSAULT	TRAUMATIC	PARAPLEGIA
68	14	52	M	BHOPAL,MP	NO SCHOOLING	DAILY LABOUER	0.3L	D7	POTT'S	NON-TRAUMATIC	PARAPLEGIA
69	10	45	M	GUNA, MP	7TH	FARMER	0.4L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
70	15	20	F	HARDA, MP	6TH	HOME MAKER	0.2L	D6	POTT'S	NON-TRAUMATIC	PARAPLEGIA
71	17	65	M	NARSIMHAPUR, MP	6TH	SHOPKEEPER	0.6L	D7	POTT'S	NON-TRAUMATIC	PARAPLEGIA
72	8	22	F	HOSHANGABAD, MP	BACHELOR	STUDENT	0.5L	D7	POTT'S	NON-TRAUMATIC	TETRAPLEGIA
73	10	35	M	BETUL,MP	10TH	FARMER	0.4L	L2	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	PARAPLEGIA
74	12	38	F	RAISEN,MP	8TH	HOME MAKER	0.4L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
75	10	31	M	LALITPUR, UP	DIPLOMA	DRIVER	0.3L	C5	HODGKIN'S LYMPHOMA (SOL)	NON-TRAUMATIC	TETRAPLEGIA
76	10	41	M	SIDHI, MP	8TH	DAILY LABOUER	0.2L	L3	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
77	9	34	M	NARSIMHAPUR, MP	8TH	DAILY LABOUER	0.3L	C4	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
78	9	55	M	BETUL,MP	10TH	CARPENTER	0.4L	D10	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	PARAPLEGIA
79	17	19	M	BHOPAL,MP	12TH	STUDENT	0.6L	C4	ASSAULT	TRAUMATIC	TETRAPLEGIA
80	16	38	M	BHOPAL,MP	10TH	SHOPKEEPER	0.4L	L2	TRANSVERSE MYELITIS	NON-TRAUMATIC	PARAPLEGIA
81	10	23	M	BETUL,MP	12TH	UNEMPLOYED	0.4L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
82	7	37	F	TIKAMGARH, MP	12TH	HOME MAKER	0.4L	C2	CV JUNCTION ABNORMALITY WITH SPINAL CORD SYRINX	NON-TRAUMATIC	TETRAPLEGIA
83	20	30	M	DAMOH, MP	9TH	DAILY LABOUER	0.2L	D6	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
84	9	20	F	CHHATARPUR, MP	GRADUATE	STUDENT	0.3L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
85	19	24	M	NARSIMHAPUR, MP	9TH	DAILY LABOUER	0.3L	D11	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
86	14	27	M	SIDHI, MP	5TH	SHOPKEEPER	0.4L	L2	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
87	11	43	F	BHOPAL,MP	5TH	HOME MAKER	0.4L	C6	COMPRESSIVE MYELOPATHY	NON-TRAUMATIC	TETRAPLEGIA
88	11	30	M	SEHORE, MP	10TH	MECHANICAL WORKER	0.5L	C4	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
89	17	24	M	RAISEN,MP	8TH	ELECTRICIAN	0.4L	D10	ELECTROCUTION	TRAUMATIC	PARAPLEGIA
90	8	44	F	HOSHANGABAD, MP	NO SCHOOLING	HOME MAKER	0.3L	D9	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
91	14	71	M	SAGAR,MP	NO SCHOOLING	DAILY LABOUER	0.3L	D9	POTT'S	NON-TRAUMATIC	PARAPLEGIA
92	11	31	M	RAISEN,MP	10TH	PRIVATE COMPANY JOB	0.4L	D12	FALL FROM STAIRS	TRAUMATIC	PARAPLEGIA
93	18	20	M	BHOPAL,MP	GRADUATE	STUDENT	0.5L	C4	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
94	11	22	M	DAMOH, MP	GRADUATE	STUDENT	0.5L	D8	SPINAL METASTASIS (SOL)	NON-TRAUMATIC	PARAPLEGIA
95	14	19	M	BHOPAL,MP	8TH	UNEMPLOYED	0.5L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
96	18	48	M	BHOPAL,MP	5TH	DAILY LABOUER	0.5L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
97	9	42	F	RAISEN,MP	5TH	HOME MAKER	0.6L	C4	TRANSVERSE MYELITIS	NON-TRAUMATIC	TETRAPLEGIA
98	14	67	M	BHOPAL,MP	NO SCHOOLING	DAILY LABOUER	0.6L	C4	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
99	8	23	M	HOSHANGABAD, MP	9TH	DRIVER	0.5L	D6	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
100	11	23	F	BETUL,MP	BACHELOR	PRIVATE FACTORY WORKER	0.7L	L1	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
101	9	55	M	BHOPAL,MP	NO SCHOOLING	DAILY LABOUER	0.3L	D12	POTT'S	NON-TRAUMATIC	PARAPLEGIA
102	8	45	M	HOSHANGABAD, MP	NO SCHOOLING	BARBER	0.4L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
103	22	24	M	BHOPAL,MP	8TH	UNEMPLOYED	0.4L	D10	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
104	11	24	M	TIKAMGARH, MP	11TH	FARMER	0.4L	D2	ASSAULT	TRAUMATIC	PARAPLEGIA
105	12	56	M	LALITPUR, UP	8TH	RATION SHOP LABOUR	0.6L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA

SL NO	DURATION OF HOSPITAL STAY (IN DAYS)	AGE (years)	SEX	ADDRESS	EDUCATION LEVEL	OCCUPATION	INCOME(IN LAKHS PER ANUM PER CAPITA)	NEUROLOGICAL LEVEL OF INJURY (NLI)	MODE OF INJURY	TRAUMATIC/ NON-TRAUMATIC	PHYSIO-LOGICAL TYPE OF SCI
106	10	27	M	BHIND, MP	6TH	SHOPKEEPER	0.7L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
107	12	23	M	LALITPUR, UP	12TH	FARMER	0.6L	D4	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
108	9	45	M	BHOPAL,MP	5TH	MOTORCYCLE MECHANICAL WORKER	0.6L	D11	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
109	13	35	M	HOSHANGABAD, MP	8TH	DAILY LABOUER	0.6L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
110	11	43	M	SAGAR,MP	10TH	DAILY LABOUER	0.6L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
111	12	55	F	BHOPAL,MP	10TH	HOME MAKER	1.0L	C4	TRANSVERSE MYELITIS	NON-TRAUMATIC	TETRAPLEGIA
112	15	27	M	HARDA, MP	10TH	COURIER DELIVERY WORKER	0.5L	D12	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
113	11	28	M	BHOPAL,MP	GRADUATE	UNEMPLOYED	0.8L	C6	POTT'S	NON-TRAUMATIC	PARAPLEGIA
114	10	40	M	LALITPUR, UP	8TH	DAILY LABOUER	0.7L	D8	ASSAULT	TRAUMATIC	PARAPLEGIA
115	11	34	M	RAISEN,MP	12TH	FARMER	0.6L	D11	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
116	9	48	M	BHOPAL,MP	12TH	PRIVATE SECTOR SUPERVISOR	0.7L	D12	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
117	10	29	F	BHOPAL,MP	11TH	UNEMPLOYED	0.5L	D10	TRANSVERSE MYELITIS	NON-TRAUMATIC	PARAPLEGIA
118	33	30	F	BETUL,MP	10TH	HOME MAKER	0.6L	D10	FALL FROM STAIRS	TRAUMATIC	PARAPLEGIA
119	11	28	M	SATNA,MP	12TH	SHOPKEEPER	0.7L	D9	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
120	9	55	M	SHAHAJPUR, MP	BACHELOR	GOVERNMENT EMPLOYEE	1.0L	L2	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
121	12	55	F	RAJGARH, MP	5TH	HOME MAKER	0.9L	C5	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
122	10	48	M	RAISEN,MP	8TH	SHOPKEEPER	0.7L	C4	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
123	10	37	F	SIDHI, MP	8TH	HOME MAKER	0.9L	C4	MENINGIOMA (SOL)	NON-TRAUMATIC	TETRAPLEGIA
124	11	26	M	BHOPAL,MP	12TH	DAILY LABOUR	0.5L	C4	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
125	13	30	M	SAGAR,MP	8TH	DAILY LABOUR	0.5L	C5	ROAD TRAFFIC ACCIDENT	TRAUMATIC	TETRAPLEGIA
126	10	48	F	BHOPAL,MP	NO SCHOOLING	HOME MAKER	0.6L	D5	ROAD TRAFFIC ACCIDENT	TRAUMATIC	PARAPLEGIA
127	10	47	M	BHOPAL,MP	12TH	PRIVATE SECTOR WORKER	1.0L	C4	SPORTS INJURY	TRAUMATIC	TETRAPLEGIA
128	15	28	M	SEHORE, MP	BACHELOR	PRIVATE SECTOR WORKER	1.0L	C6	ASSAULT	TRAUMATIC	TETRAPLEGIA
129	15	28	M	BETUL,MP	BACHELOR	UNEMPLOYED	0.7L	C6	FALL OF HEAVY OBJECT	TRAUMATIC	TETRAPLEGIA
130	20	65	M	SAHAJPUR, MP	6TH	DAILY LABOUR	0.5L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
131	9	45	M	BHOPAL,MP	6TH	FARMER	0.5L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA
132	8	22	M	LALITPUR, UP	8TH	FARMER	0.7L	C4	ELECTROCUTION	TRAUMATIC	TETRAPLEGIA
133	12	22	M	SAGAR,MP	GRADUATE	STUDENT	0.8L	D4	TUBERCULOMA (SOL)	NON-TRAUMATIC	PARAPLEGIA
134	10	19	M	SAGAR,MP	12TH	STUDENT	1.0L	L1	FALL FROM HEIGHT	TRAUMATIC	PARAPLEGIA

		PRESSURE INJURY					BRADEN SCALE						
SL NO	ASIA IMPAIR-MENT SCALE (AIS)	No.	LOCATION	STAGE	DURATION (IN MONTHS)	SCI DURATION (IN MONTHS)	SENSORY PERCEPTION	ACTIVITY	MOISTURE	MOBILITY	NUTRITION	FRICTION/SHEAR	BRADEN TOTAL
1	A	3	1,4,5	4,UNSTAGABLE,4	6,6,6	8	2	2	1	1	2	1	9
2	A	1	1	4	6	8	1	2	4	2	2	1	12
3	B	1	1	UNSTAGABLE	12	14	2	2	1	2	2	1	10
4	A	1	1	4	6	9	2	2	4	2	2	1	13
5	D	1	1	1	1	1	1	2	4	2	2	2	13
6	C	2	1,4	2,1	1,1	1	2	2	4	2	2	2	14
7	A	1	1	2	1	3	1	2	1	1	1	1	7
8	A	1	1	2	1	48	2	2	1	2	2	1	10
9	A	5	1,4,5,14,15	3,4,4,2,3	4,4,4,3,4	9	1	2	4	2	2	1	12
10	C	1	1	4	6	50	1	2	2	2	2	2	11
11	A	1	1	4	6	8	1	2	1	1	2	1	8
12	A	1	1	4	4	5	1	2	1	2	2	1	9
13	A	1	26	4	3	12	1	2	4	1	2	1	11
14	D	1	1	2	1	2	1	3	3	3	2	2	14
15	A	1	1	4	7	10	1	1	1	1	1	1	6
16	C	2	1,4	2,2	1,1	3	1	3	2	3	2	2	13
17	D	1	1	DTPI	1	3	1	3	3	3	3	2	15
18	B	1	6	UNSTAGABLE	24	30	1	2	1	2	2	1	9
19	B	1	7	4	8	10	1	2	4	1	2	1	11
20	A	1	6	1	2	4	1	1	1	2	2	1	8
21	A	1	1	2	3	46	1	2	1	2	2	1	9
22	A	1	1	2	2	4	2	2	4	2	2	1	13
23	C	1	1	4	7	9	1	2	2	2	2	2	11
24	A	1	1	2	1	1	1	1	1	2	2	1	8
25	A	4	1,5,21,25	3,3,3,3	2,2,2,2	4	1	1	1	1	2	1	7
26	D	1	25	3	2	3	1	3	3	3	2	2	14
27	A	5	1,4,5,6,7	4,4,4,4,4	3,3,3,3,3	24	1	2	1	2	2	1	9
28	A	7	1,4,5,20,21,22,23	4,4,4,2,2,2,2	2,2,2,2,2,2,2	3	1	1	1	1	2	1	7
29	B	1	1	UNSTAGABLE	10	18	1	2	2	2	2	1	10
30	A	5	1,4,5,6,7	2,3,4,4,4	3,4,6,8,6	9	2	2	1	2	2	1	10
31	D	1	1	2	2	6	3	3	3	3	3	2	17
32	A	2	6,7	3,2	8,2	12	1	2	1	2	2	1	9
33	D	1	1	3	1	2	1	3	3	3	2	2	14
34	A	1	1	3	6	8	2	2	4	2	2	1	13
35	A	2	6,7	4,3	6,5	9	2	2	1	2	2	1	10
36	B	1	1	2	1	50	1	2	1	2	2	1	9
37	B	1	1	2	3	18	3	2	2	2	2	1	12
38	A	3	1,4,5	4,4,3	6,6,5	8	1	2	1	1	2	1	8
39	A	7	1,4,5,10,12,13,22	4,4,4,DTPI,2,2,2	4,4,4,1,1,1,1	6	1	2	1	2	2	1	9
40	B	1	6	3	2	4	1	2	4	2	2	1	12
41	A	1	8	2	1	1	3	2	1	2	2	1	11
42	B	1	1	3	3	5	1	2	4	1	2	1	11
43	C	2	1,5	4,3	6,5	8	3	3	2	3	2	2	15
44	D	1	4	2	1	10	3	3	3	3	3	2	17
45	A	3	1,4,5	4,UNSTAGABLE,4	8,14,6	16	1	1	1	2	2	1	8
46	B	1	5	3	3	12	3	2	2	2	2	1	12
47	A	2	1,4	2,2	1,2	3	1	1	1	1	2	1	7
48	B	4	1,4,5,6	4,4,4,4	6,6,6,6	50	2	2	2	2	2	1	11
49	C	1	3	2	1	4	1	2	1	2	2	2	10
50	C	4	6,7,16,17	4,4,2,2	24,24,4,4	30	3	2	2	2	2	2	13
51	A	1	1	2	1	3	1	1	1	1	2	1	7
52	D	1	1	2	2	10	1	3	4	3	2	2	15
53	A	1	9	4	6	9	2	1	1	2	2	1	9
54	B	1	1	2	2	3	1	1	2	1	2	1	8

		PRESSURE INJURY					BRADEN SCALE						
SL NO	ASIA IMPAIR-MENT SCALE (AIS)	No.	LOCATION	STAGE	DURATION (IN MONTHS)	SCI DURATION (IN MONTHS)	SENSORY PERCEPTION	ACTIVITY	MOISTURE	MOBILITY	NUTRITION	FRICTION/SHEAR	BRADEN TOTAL
55	A	1	1	3	2	4	3	1	1	2	2	1	10
56	A	1	5	4	5	7	2	1	1	2	2	1	9
57	A	1	1	3	2	4	1	1	4	1	2	1	10
58	A	3	1,4,5	4,2,2	12,3,2	24	2	1	1	2	2	1	9
59	A	1	4	3	3	5	3	2	1	2	2	1	11
60	C	1	9	2	1	8	2	2	2	2	2	2	12
61	B	4	1,4,5,6	2,4,2,2	3,6,2,4	12	3	2	1	2	2	1	11
62	A	1	6	2	6	46	1	2	1	2	2	1	9
63	A	2	6,7	2,2	1,1	2	1	1	4	1	2	1	10
64	A	1	23	2	1	40	3	2	1	2	2	1	11
65	C	2	4,5	2,2	1,1	50	2	3	2	2	2	2	13
66	A	1	1	3	4	12	3	2	1	2	2	1	11
67	A	2	6,7	3,3	4,5	8	1	1	1	2	2	1	8
68	B	2	1,5	3,4	6,6	8	1	2	2	2	2	1	10
69	C	2	4,5	2,2	1,1	56	2	2	2	2	2	2	12
70	B	2	1,4	4,UNSTAGABLE	9,10	12	1	2	1	2	2	1	9
71	A	3	1,4,6	4,3,4	4,4,4	6	1	1	4	2	2	1	11
72	C	2	6,7	3,2	4,3	7	1	2	2	2	2	2	11
73	B	1	1	4	8	12	3	2	1	2	2	1	11
74	A	4	1,4,20,21	4,4,UNSTAGABLE,UNSTAGABLE	3,4,4,4	12	2	1	1	2	2	1	9
75	B	2	4,7	UNSTAGABLE,4	10,10	30	1	2	4	1	2	1	11
76	D	1	1	2	1	2	3	3	3	3	2	2	16
77	A	3	1,25,26	3,2,2	5,1,2	8	1	1	1	1	2	1	7
78	B	1	1	4	2	18	1	2	1	2	2	1	9
79	A	1	1	3	1	1	1	1	4	1	1	1	9
80	A	1	1	2	3	8	3	2	1	2	2	1	11
81	C	1	1	4	4	36	3	2	2	2	2	2	13
82	D	1	29	2	1	12	1	3	3	3	2	2	14
83	A	3	1,4,5	3,2,2	1,1,1	4	1	1	1	2	2	1	8
84	B	2	1,4	4,4	10,10	12	3	2	1	2	2	1	11
85	C	1	18	2	1	24	2	2	2	2	2	2	12
86	D	1	1	2	3	44	3	3	3	3	3	2	17
87	A	1	1	UNSTAGABLE	1	2	1	1	1	1	2	1	7
88	C	1	1	2	1	2	1	2	4	2	2	2	13
89	A	2	1,5	2,3	1,1	36	2	2	4	2	2	1	13
90	C	1	1	2	1	2	1	2	2	2	2	2	11
91	A	1	4	4	5	6	1	1	4	2	2	1	11
92	A	1	1	UNSTAGABLE	2	3	2	1	1	2	2	1	9
93	A	1	1	3	1	2	1	1	1	1	2	1	7
94	A	3	1,4,5	4,4,4	3,3,3	4	1	1	1	2	2	1	8
95	B	1	1	2	1	2	3	2	2	2	2	1	12
96	A	1	1	2	2	3	3	1	1	2	2	1	10
97	C	1	1	4	6	10	1	2	2	2	2	2	11
98	A	1	26	4	1	2	1	1	1	1	2	1	7
99	A	1	1	1	1	2	1	1	1	2	2	1	8
100	A	2	4,5	4,4	10,10	12	3	2	4	2	2	1	14
101	A	3	1,4,5	3,4,4	6,10,10	12	2	1	1	2	2	1	9
102	A	1	1	1	3	6	3	1	1	2	2	1	10
103	A	1	1	4	12	44	1	1	4	2	2	1	11
104	A	1	1	UNSTAGABLE	14	15	1	1	1	2	2	1	8
105	B	1	1	2	1	1	2	1	4	2	2	1	12

		PRESSURE INJURY					BRADEN SCALE						
SL NO	ASIA IMPAIR-MENT SCALE (AIS)	No.	LOCATION	STAGE	DURATION (IN MONTHS)	SCI DURATION (IN MONTHS)	SENSORY PERCEPTION	ACTIVITY	MOISTURE	MOBILITY	NUTRITION	FRICTION/SHEAR	BRADEN TOTAL
106	B	2	3,13	1,1	1,1	36	3	2	1	2	2	1	11
107	A	2	4,8	2,2	2,2	30	1	1	1	2	2	1	8
108	A	1	1	2	2	18	2	1	1	2	2	1	9
109	A	3	1,6,22	4,4,2	8,8,2	12	2	1	4	2	2	1	12
110	A	1	1	UNSTAGABLE	12	15	3	1	1	2	2	1	10
111	C	2	6,7	2,2	2,2	6	1	2	4	2	2	2	13
112	B	2	1,6	UNSTAGABLE, DTPI	12,1	14	2	1	1	2	2	1	9
113	B	2	1,25	3,2	4,3	5	1	2	1	1	2	1	8
114	A	2	4,5	4,4	12,12	15	1	1	4	2	2	1	11
115	A	4	2,4,5,7	2,3,3,3	1,4,4,4	6	2	1	1	2	2	1	9
116	A	1	1	3	4	6	2	1	1	2	2	1	9
117	A	3	1,4,20	3,4,2	6,6,2	8	1	1	4	2	2	1	11
118	A	1	4	4	4	5	1	1	1	2	2	1	8
119	B	1	1	3	2	4	1	1	4	2	2	1	11
120	C	1	1	2	1	2	3	2	2	2	2	2	13
121	B	4	1,4,12,13	3,4,2,2	5,5,2,2	8	1	2	1	1	2	1	8
122	A	1	1	UNSTAGABLE	6	8	1	1	1	1	1	1	6
123	C	1	6	2	2	12	1	2	4	2	2	2	13
124	D	1	6	2	1	12	1	3	4	3	2	2	15
125	A	3	1,4,5	4,4,4	8,6,8	12	1	1	1	1	2	1	7
126	A	1	1	4	6	8	1	1	1	2	2	1	8
127	A	1	5	4	5	7	1	1	4	1	2	1	10
128	B	1	7	4	4	7	1	1	1	1	2	1	7
129	B	1	1	2	2	3	1	1	1	1	2	1	7
130	C	1	18	2	1	6	3	2	2	2	2	2	13
131	A	2	1,4	3,4	4,4	7	3	2	1	2	2	1	11
132	B	1	1	3	4	5	1	1	1	1	2	1	7
133	A	1	1	3	2	4	1	1	4	2	2	1	11
134	A	1	7	1	1	5	3	2	1	2	2	1	11

	SCIPUS SCALE												
SL NO	LEVEL OF ACTIVITY	MOBILITY	COMPLETE SCI	URINE INCONTINENCE/ CONSTANTLY MOIST	AUTONOMIC DYSREFLEXIA/SEVERE SPASTICITY	AGE	TOBACCO USE/ SMOKING	PULMONARY DISEASE	CARDIAC DISEASE/ ABN.EKG	DIABETES/ GLUCOSE>= 110	RENAL DISEASE	IMPAIRED COGNITIVE FUNCTION	IN A NURSING HOME/ HOSPITAL
1	1	3	1	1	0	1	1	0	0	0	0	0	2
2	1	1	1	0	0	1	1	0	0	0	0	0	2
3	1	1	0	1	0	0	0	0	0	0	0	0	2
4	1	1	1	0	0	0	1	0	0	0	0	0	2
5	1	1	0	0	0	0	0	0	0	0	0	0	2
6	1	1	0	0	0	1	0	0	0	1	0	0	2
7	1	3	1	1	0	1	3	0	1	1	0	0	2
8	1	1	1	1	0	1	0	0	0	0	0	0	2
9	1	1	1	0	0	0	1	0	0	0	0	0	2
10	1	1	0	1	0	0	0	0	0	0	0	0	2
11	1	3	1	1	0	0	1	0	0	0	0	0	2
12	1	1	1	1	0	0	1	0	0	0	0	0	2
13	1	3	1	0	0	1	0	0	0	0	0	0	2
14	0	1	0	1	0	2	0	1	0	1	0	0	2
15	4	3	1	1	0	1	1	0	0	0	0	0	2
16	0	1	0	1	0	1	0	0	0	0	0	0	2
17	0	1	0	1	0	1	0	0	0	0	0	0	2
18	1	1	O	1	0	0	0	0	0	0	0	0	2
19	1	3	0	0	0	0	3	0	0	0	0	0	2
20	4	1	1	1	0	1	0	0	0	0	0	0	2
21	1	1	1	1	0	0	0	0	0	0	0	0	2
22	1	1	1	0	0	1	0	0	0	0	0	0	2
23	1	1	0	1	0	1	1	0	0	1	0	0	2
24	4	1	1	1	0	0	0	0	0	0	0	0	2
25	4	3	1	1	0	0	0	0	0	0	0	0	2
26	0	1	0	1	0	0	0	0	0	0	0	0	2
27	1	1	1	1	0	0	0	0	0	0	0	0	2
28	4	3	1	1	1	0	3	0	0	0	0	0	2
29	1	1	0	1	0	1	0	0	0	0	0	0	2
30	1	1	1	1	0	1	0	0	0	1	0	0	2
31	0	1	0	1	0	2	0	0	0	0	0	0	2
32	1	1	1	1	0	0	0	0	0	0	0	0	2
33	0	1	0	1	1	1	0	0	0	1	0	0	2
34	1	1	1	0	0	1	0	0	0	0	0	0	2
35	1	1	1	1	0	2	0	0	0	0	0	0	2
36	1	1	0	1	0	1	1	1	0	1	0	0	2
37	1	1	0	1	0	0	0	0	0	1	0	0	2
38	1	3	1	1	1	1	3	0	1	0	0	0	2
39	1	1	1	1	1	0	0	0	0	0	0	0	2
40	1	1	0	0	0	1	3	0	0	0	0	0	2
41	1	1	1	1	0	0	1	0	0	0	0	0	2
42	1	3	0	0	0	0	3	0	0	0	0	0	2
43	0	1	0	1	0	0	0	0	0	0	0	0	2
44	0	1	0	1	0	0	0	0	0	0	0	0	2
45	4	1	1	1	0	1	0	0	0	0	0	0	2
46	1	1	0	1	0	1	1	0	0	0	0	0	2
47	4	3	1	1	0	1	0	0	0	0	0	0	2
48	1	1	0	1	0	0	0	0	0	0	0	0	2
49	1	1	0	1	1	1	1	0	0	0	0	0	2
50	1	1	0	1	0	1	1	0	0	0	0	0	2
51	4	3	1	1	1	1	0	0	1	0	0	0	2
52	0	1	0	0	0	2	0	0	0	0	0	0	2
53	4	1	1	1	0	2	0	0	0	0	0	0	2
54	4	3	0	1	0	1	1	0	0	1	0	0	2

	SCIPUS SCALE												
SL NO	LEVEL OF ACTIVITY	MOBILITY	COMPLETE SCI	URINE INCONTINENCE/ CONSTANTLY MOIST	AUTONOMIC DYSREFLEXIA/SEVERE SPASTICITY	AGE	TOBACCO USE/ SMOKING	PULMONARY DISEASE	CARDIAC DISEASE/ ABN.EKG	DIABETES/ GLUCOSE>= 110	RENAL DISEASE	IMPAIRED COGNITIVE FUNCTION	IN A NURSING HOME/ HOSPITAL
55	4	1	1	1	0	1	0	0	0	0	0	0	2
56	4	1	1	1	0	1	1	0	0	1	0	0	2
57	4	3	1	0	1	1	0	0	0	0	0	0	2
58	4	1	1	1	0	0	0	0	1	0	0	0	2
59	1	1	1	1	0	1	1	0	0	0	0	0	2
60	1	1	0	1	0	0	0	0	0	0	0	0	2
61	1	1	0	1	0	1	0	0	0	0	0	0	2
62	1	1	1	1	0	0	1	0	0	0	0	0	2
63	4	3	1	0	1	1	0	0	0	0	0	0	2
64	1	1	1	1	0	1	0	0	0	0	0	0	2
65	0	1	0	1	0	2	0	0	0	0	0	0	2
66	1	1	1	1	0	1	1	0	0	0	0	0	2
67	4	1	1	1	0	0	0	0	0	0	0	0	2
68	1	1	0	1	0	1	0	0	0	0	0	0	2
69	1	1	0	1	0	1	1	0	0	0	0	0	2
70	1	1	0	1	1	0	0	0	0	0	0	0	2
71	4	1	1	0	0	2	0	0	0	0	0	0	2
72	1	1	0	1	0	0	1	0	0	0	0	0	2
73	1	1	0	1	0	1	0	0	0	0	0	0	2
74	4	1	1	1	0	1	0	0	0	0	0	0	2
75	1	3	0	0	1	0	0	0	0	0	0	0	2
76	0	1	0	1	0	1	0	0	0	0	0	0	2
77	4	3	1	1	1	0	1	0	0	0	0	0	2
78	1	1	0	1	0	1	1	0	0	0	0	0	2
79	4	3	1	0	0	0	0	0	0	0	0	0	2
80	1	1	1	1	0	1	1	0	0	0	0	0	2
81	1	1	0	1	0	0	0	0	0	0	0	0	2
82	0	1	0	1	0	1	0	0	0	0	0	0	2
83	4	1	1	1	1	0	1	0	0	0	0	0	2
84	1	1	0	1	0	0	0	0	0	0	0	0	2
85	1	1	0	1	0	0	1	0	0	0	0	0	2
86	0	1	0	1	0	0	0	0	0	0	0	0	2
87	4	3	1	1	1	1	0	0	0	0	0	0	2
88	1	1	0	0	0	0	0	0	0	0	0	0	2
89	1	1	1	0	0	0	0	0	0	0	0	0	2
90	1	1	0	1	0	1	0	0	0	0	0	0	2
91	4	1	1	0	0	2	0	0	0	0	0	0	2
92	4	1	1	1	0	0	0	0	0	0	0	0	2
93	4	3	1	1	1	0	0	0	0	0	0	0	2
94	4	1	1	1	0	0	0	0	0	0	0	0	2
95	1	1	0	1	0	0	0	0	0	0	0	0	2
96	4	1	1	1	0	1	0	0	0	0	0	0	2
97	1	1	0	1	0	1	0	0	0	0	0	0	2
98	4	3	1	1	0	2	1	0	0	0	0	0	2
99	4	1	1	1	0	0	1	0	0	0	0	0	2
100	1	1	1	0	0	0	0	0	0	0	0	0	2
101	4	1	1	1	0	1	0	0	0	1	0	0	2
102	4	1	1	1	0	1	0	0	0	0	0	0	2
103	4	1	1	0	0	0	1	0	0	0	0	0	2
104	4	1	1	1	0	0	0	0	0	0	0	0	2
105	4	1	0	0	1	1	1	0	0	1	0	0	2

	SCIPUS SCALE												
SL NO	LEVEL OF ACTIVITY	MOBILITY	COMPLETE SCI	URINE INCONTINENCE/ CONSTANTLY MOIST	AUTONOMIC DYSREFLEXIA/SEVERE SPASTICITY	AGE	TOBACCO USE/ SMOKING	PULMONARY DISEASE	CARDIAC DISEASE/ ABN.EKG	DIABETES/ GLUCOSE=> 110	RENAL DISEASE	IMPAIRED COGNITIVE FIUNCTION	IN A NURSING HOME/ HOSPITAL
106	1	1	0	1	0	0	1	0	0	0	0	0	2
107	4	1	1	1	1	0	0	0	0	0	0	0	2
108	4	1	1	1	0	1	1	0	0	0	0	0	2
109	4	1	1	0	1	1	0	0	0	0	0	0	2
110	4	1	1	1	0	1	0	0	0	0	0	0	2
111	1	1	0	0	0	1	0	0	0	0	0	0	2
112	4	1	0	1	0	0	0	0	0	0	0	0	2
113	1	3	0	1	1	0	0	0	0	0	0	0	2
114	4	1	1	0	0	1	1	0	0	0	0	0	2
115	4	1	1	1	0	0	0	0	0	0	0	0	2
116	4	1	1	1	0	1	1	0	0	0	0	0	2
117	4	1	1	0	0	0	0	0	0	0	0	0	2
118	4	1	1	1	0	0	0	0	0	0	0	0	2
119	4	1	0	0	0	0	0	0	0	0	0	0	2
120	1	1	0	1	0	1	1	0	0	0	0	0	2
121	1	3	0	1	1	1	0	0	0	0	0	0	2
122	4	3	1	1	1	1	0	0	0	0	0	0	2
123	1	1	0	0	1	1	0	0	0	0	0	0	2
124	0	1	0	0	0	0	1	0	0	0	0	0	2
125	4	3	1	1	1	0	0	0	0	0	0	0	2
126	4	1	1	1	1	1	0	0	0	0	0	0	2
127	4	3	1	0	0	1	0	0	0	0	0	0	2
128	4	3	0	1	0	0	0	0	0	0	0	0	2
129	4	3	0	1	0	0	0	0	0	0	0	0	2
130	1	1	0	1	0	2	0	0	0	0	0	0	2
131	1	1	1	1	0	1	0	0	0	0	0	0	2
132	4	3	0	1	0	0	0	0	0	0	0	0	2
133	4	1	1	0	1	0	0	0	0	0	0	0	2
134	1	1	1	1	0	0	0	0	0	0	0	0	2

				WHO-QOL BREF				
SL NO	ALBUMIN<3.4 / TOTAL PROTEIN<6.4	HEMOGLOBIN<12.0/ HEMATOCRIT<36.0	SCIPUS TOTAL	PHYSICAL HEALTH DOMAIN	PSYCHOLOGICAL DOMAIN	SOCIAL RELATIONSHIP DOMAIN	ENVIRONMENT DOMAIN	WHOQOL BREF TOTAL
1	1	1	12	25	18	10	21	74
2	0	0	7	18	15	7	15	55
3	0	1	6	14	15	11	25	65
4	0	1	8	25	18	10	21	74
5	0	0	4	17	10	8	25	60
6	1	1	8	16	18	9	17	60
7	0	0	14	16	19	8	24	67
8	0	1	8	22	23	12	29	86
9	1	1	8	17	19	11	25	72
10	0	0	5	16	18	9	17	60
11	0	0	8	23	20	12	27	82
12	1	0	8	13	16	12	26	67
13	1	1	8	18	21	9	25	73
14	0	1	9	17	10	8	25	60
15	1	0	13	15	25	12	26	77
16	0	0	5	18	20	12	31	81
17	0	0	5	29	25	13	23	90
18	0	0	5	17	19	9	32	77
19	0	0	9	21	23	11	31	86
20	0	0	10	14	22	12	31	79
21	1	0	7	17	18	10	22	67
22	1	0	7	17	18	10	22	67
23	1	1	10	17	19	12	32	80
24	0	0	9	16	23	15	32	86
25	0	0	11	13	17	12	28	70
26	1	1	6	15	17	11	31	74
27	1	1	8	20	19	12	31	82
28	0	1	16	12	11	10	26	59
29	0	1	7	17	22	9	33	81
30	0	0	8	22	24	12	32	90
31	0	0	6	20	24	12	36	92
32	0	0	6	16	22	11	29	78
33	0	1	8	14	23	15	19	71
34	0	0	6	16	20	14	34	84
35	0	0	8	16	20	14	34	84
36	1	1	11	21	13	11	17	62
37	0	0	6	21	19	14	33	87
38	0	1	15	12	11	10	26	59
39	0	1	8	16	18	12	29	75
40	0	0	8	21	23	11	31	86
41	1	0	8	15	19	12	32	78
42	0	0	9	21	23	11	31	86
43	0	0	4	18	20	12	31	81
44	0	1	5	13	14	10	23	60
45	0	1	11	16	18	12	29	75
46	0	1	8	17	16	11	26	70
47	0	0	12	12	17	12	28	69
48	0	1	6	16	17	11	27	71
49	1	0	9	12	16	12	29	69
50	0	0	7	19	19	13	32	83
51	1	0	15	10	14	12	27	63
52	0	0	5	17	23	12	33	85
53	1	1	13	16	18	10	28	72
54	1	1	15	17	19	12	32	80

				WHO-QOL BREF				
SL NO	ALBUMIN<3.4 / TOTAL PROTEIN<6.4	HEMOGLOBIN<12.0/ HEMATOCRIT<36.0	SCIPUS TOTAL	PHYSICAL HEALTH DOMAIN	PSYCHOLOGICAL DOMAIN	SOCIAL RELATIONSHIP DOMAIN	ENVIRONMENT DOMAIN	WHOQOL BREF TOTAL
55	1	1	12	16	18	10	28	72
56	1	1	14	17	19	12	32	80
57	1	1	14	10	14	12	27	63
58	1	0	11	10	14	12	27	63
59	0	0	8	20	23	12	33	88
60	0	0	5	15	17	12	3	74
61	1	1	8	14	21	12	30	77
62	1	1	9	17	19	12	32	80
63	1	0	13	14	17	11	27	69
64	0	0	7	15	18	11	29	73
65	1	0	7	15	23	12	33	83
66	0	0	8	14	18	11	29	72
67	0	0	9	15	17	11	26	69
68	0	0	6	17	19	12	28	76
69	0	1	8	16	17	12	32	77
70	0	1	7	15	18	10	29	72
71	0	0	10	15	20	9	32	76
72	0	1	7	16	17	12	32	77
73	0	0	6	19	22	12	30	83
74	1	1	12	12	19	12	29	72
75	0	0	7	17	16	9	3	72
76	0	0	5	16	19	12	31	78
77	0	0	13	14	16	12	30	72
78	0	0	7	16	19	12	32	79
79	0	0	10	13	17	11	29	70
80	0	0	8	15	23	11	31	80
81	0	0	5	21	22	9	22	74
82	1	1	7	18	22	12	30	82
83	1	0	12	11	15	9	28	63
84	0	1	6	17	20	12	33	82
85	0	0	6	15	18	9	30	72
86	0	0	4	18	19	11	29	77
87	1	1	15	15	19	11	31	76
88	0	0	4	11	18	11	27	67
89	0	0	5	12	14	9	30	65
90	1	1	8	11	17	9	28	65
91	0	0	10	12	14	9	30	65
92	1	1	11	12	17	10	32	71
93	1	1	14	10	17	10	28	65
94	0	1	10	10	17	10	28	65
95	0	1	6	17	20	12	33	82
96	1	1	12	12	17	10	32	71
97	0	1	7	11	19	8	28	66
98	1	1	16	12	16	8	30	66
99	1	1	13	12	16	8	30	66
100	1	1	7	24	24	12	31	91
101	1	1	13	12	14	9	27	62
102	1	1	12	12	18	9	24	63
103	0	0	9	15	17	7	24	63
104	1	1	11	12	15	7	25	59
105	1	1	13	14	17	10	30	71

				WHO-QOL BREF				
SL NO	ALBUMIN<3.4 / TOTAL PROTEIN<6.4	HEMOGLOBIN<12.0/ HEMATOCRIT<36.0	SCIPUS TOTAL	PHYSICAL HEALTH DOMAIN	PSYCHOLOGICAL DOMAIN	SOCIAL RELATIONSHIP DOMAIN	ENVIRONMENT DOMAIN	WHOQOL BREF TOTAL
106	0	0	6	18	20	10	28	76
107	0	0	10	15	17	9	29	70
108	0	0	11	14	15	7	21	57
109	0	1	11	13	18	9	29	69
110	1	1	12	13	15	8	29	111
111	1	1	7	10	17	8	32	67
112	1	0	9	12	17	9	24	72
113	0	0	8	17	19	9	30	75
114	1	0	11	10	17	9	23	59
115	1	1	11	14	20	9	27	70
116	1	0	12	16	22	10	30	78
117	0	1	9	14	15	9	27	65
118	0	1	10	10	16	10	30	66
119	0	0	7	15	18	9	29	71
120	1	0	8	17	23	12	32	84
121	0	1	10	18	17	10	27	67
122	1	0	14	11	14	8	26	59
123	0	0	6	11	19	8	28	66
124	0	1	5	11	14	9	27	61
125	1	0	13	18	19	10	27	74
126	0	0	11	11	16	10	27	64
127	0	0	11	10	17	12	30	69
128	0	0	10	15	20	8	28	71
129	0	0	10	15	20	8	28	71
130	0	0	7	14	23	11	33	81
131	1	1	9	16	19	12	32	79
132	0	0	10	15	19	10	30	74
133	1	1	11	11	16	10	27	64
134	0	0	6	16	19	12	32	79

KEY: LOCATION OF PRESSURE INJURY

1	SACRUM
2	DORSUM OF PENIS
3	COCCYX
4	RIGHT GT
5	LEFT GT
6	RIGHT IT
7	LEFT IT
8	RIGHT GLUTEAL FOLD
9	LEFT GLUTEAL FOLD
10	RIGHT PSIS
11	LEFT PSIS
12	RIGHT TIBIAL MEDIAL CONDYLE
13	LEFT TIBIAL MEDIAL CONDYLE
14	RIGHT FIBULAR HEAD
15	LEFT FIBULAR HEAD
16	RIGHT FOREFOOT
17	LEFT FOREFOOT
18	RIGHT MM
19	LEFT MM
20	RIGHT LM
21	LEFT LM
22	RIGHT HEEL
23	LEFT HEEL
24	RIGHT SCAPULA
25	LEFT SCAPULA
26	OCCIPUT
27	RIGHT GROIN
28	LEFT GROIN
29	RIGHT LITTLE FINGER LATERAL ASPEC
30	LEFT LITTLE FINGER LATERAL ASPECT
31	RIGHT MIDFOOT MEDIAL ASPECT
32	LEFT MIDFOOT MEDIAL ASPECT